ORDER NO. AD8903044C8

Service Manual

Compact Disc Player

SL-PJ26

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(GN)	New Zealand.	(K)
(GC)	Third Region.	(K)

SPECIFICATIONS

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2 – 20,000 Hz ± 0.5 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	96 dB
Total harmonic distortion	0.005 % (1 kHz, 0 dB)
Harmonic distortion	0.003 % (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	2DAC, 18-bit
Output impedance	Approx. 600Ω
Load impedance	More than 10 kΩ

■ Pickup

Wavelength	780 nm

■ General

Power supply	
For New Zealand:	AC 50/60 Hz, 240 V
For Continental Europe:	AC 50/60 Hz, 220 V
For others:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption	11 W
Dimensions (W × H × D)	
For Continental Europe:	360 × 96 × 291 mm
For others:	360 × 96 × 280 mm
Weight	3.4 kg

Note

Specifications are subject to change without notice for further improvement.

Weight and dimensions are approximate.

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

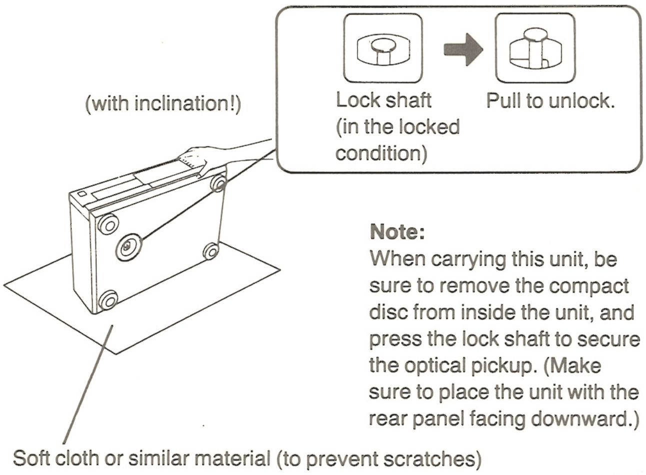
CONTENTS

	Page
PLACEMENT	2
ACCESSORIES	2
PRECAUTION OF LASER DIODE	3
LOCATION OF CONTROLS	4, 5
CONNECTIONS	6
HANDLING PRECAUTIONS FOR OPTICAL PICKUP	7
INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)	7
DISASSEMBLY INSTRUCTIONS	8~11
MEASUREMENTS AND ADJUSTMENTS	12~16
NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)	16
TERMINAL FUNCTIONS OF IC's	17~22
BLOCK DIAGRAM	23~25
INTERNAL CONNECTION OF FL	26
TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES	26
SCHEMATIC DIAGRAM	27~32
PRINTED CIRCUIT BOARDS	33~36
WIRING CONNECTION DIAGRAM	37
TROUBLESHOOTING GUIDE	38~40
RESISTORS & CAPACITORS	41~43
REPLACEMENT PARTS LIST	44~46
PACKING	46
EXPLODED VIEW	47~49
REPLACEMENT PARTS LIST	50

PLACEMENT

Before placement

The optical pickup is secured to prevent damage during transport. Be sure to release it before use.


(with inclination!)
Lock shaft (in the locked condition)
Pull to unlock.
Soft cloth or similar material (to prevent scratches)

Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and press the lock shaft to secure the optical pickup. (Make sure to place the unit with the rear panel facing downward.)

Notes of placement

- **Place on a flat, level surface so that the front-rear inclination does not exceed 5°.**
- **Avoid places such as the following:**
  - Near any equipment or device that generates strong magnetism.
  - On any heat-generating equipment or device, or in any place where the temperature is high (40°C or higher).
  - Extremely cold places (5°C or below).
  - Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.).
- **Do not place heavy objects, other than system components, on top of the unit.**
- **When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps.**
  Always remove the disc before storing the unit for any period of time.
- **To avoid problems due to vibration.**
  - Do not place a book or similar object under this unit.
  - Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

ACCESSORIES

Item	Qty
AC power supply cord SFDAC05E03 (E) SJA173 (GN) RJA0004 (GC)	1
Stereo connection cable (SJP2249-3)	1
L-type cable (SJP2257T)	2

PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nM
Maximum output radiation power from pick up: 100 µW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

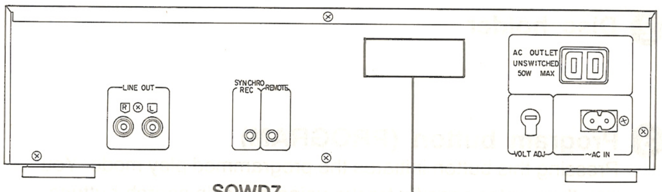
ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge: 780 nM
Maximale strahlungsleistung der lasereinheit: 100 µW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefähriich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.



SQWD7

CLASS 1
LASER PRODUCT
SQWD7

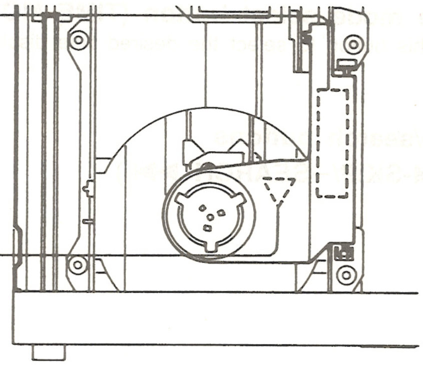
Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

SQWD87

ADVARSEL. Usynligt laserlys udstråles ved åbning.
UNDGÅ DIREKTE BESTRÅLING.

VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet.
Nicht dem Strahl aussetzen.

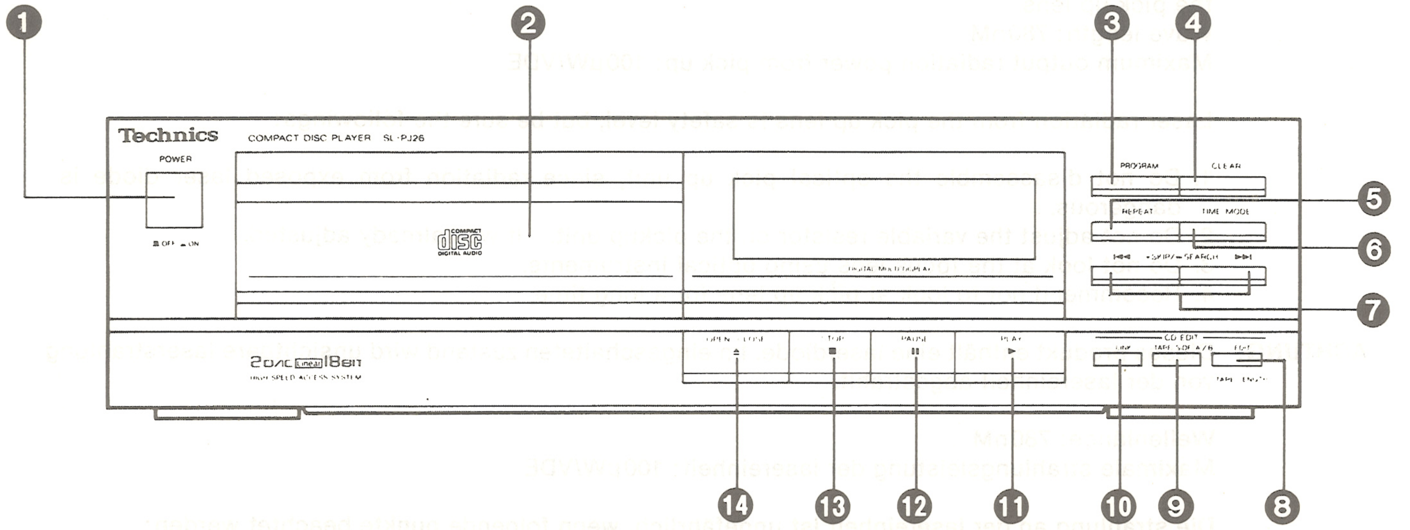
DANGER-Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.
SQWD87



SQWD19

VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilya

LOCATION OF CONTROLS


①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
Technics
COMPACT DISC PLAYER SL-PJ26
POWER
OFF ON
COMPACT disc DIGITAL AUDIO
DIGITAL MULTI DISPLAY
PROGRAM
CLEAR
REPEAT
TIME MODE
SKIP/–SEARCH
OPEN/CLOSE
STOP
PAUSE
PLAY
CD EDIT
LINK
TAPE SIDE A/B
EDIT
TAPE LENGTH
2DAC Linear 18BIT
HIGH SPEED ACCESS SYSTEM

Control section

① Power switch (POWER)

② Disc holder

③ Program button (PROGRAM)
Pressing this button initiates the programmed play mode. You can then enter specific tracks using the skip/search buttons.

④ Clear button (CLEAR)
This button can be used to clear tracks from the programmed sequence one at a time.

⑤ Repeat button (REPEAT)

⑥ Time mode select button (TIME MODE)
Use this button to select the desired time display mode.

⑦ Skip/search buttons
(⏮-SKIP/–SEARCH ⏭)

⑧ Edit tape length button (EDIT/TAPE LENGTH)
This button is used when recording from a compact disc. When the button is pressed and the tape's length is specified, the tracks to be recorded will be automatically selected.

⑨ Tape-side select button (TAPE SIDE A/B)
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

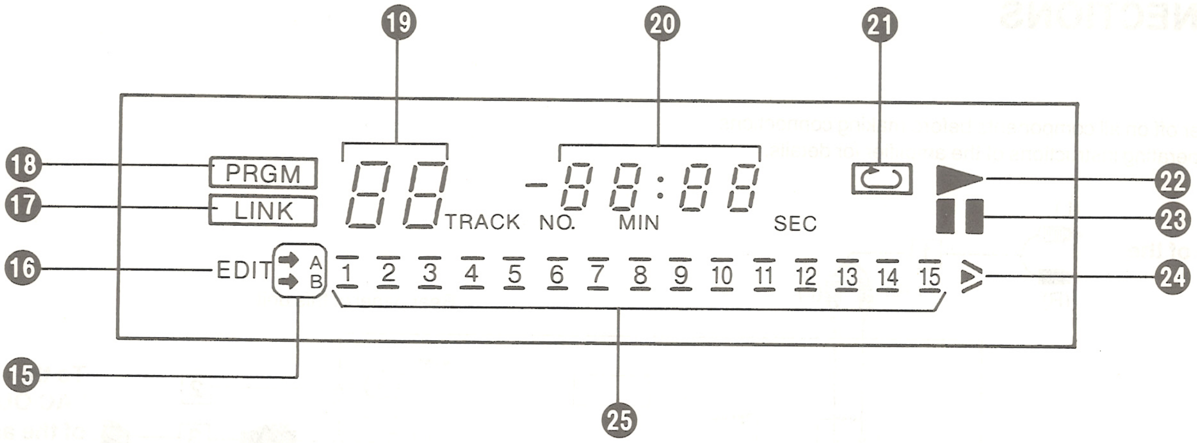
⑩ Link button (LINK)
This button is used when edit-recordings are made from several compact discs.

⑪ Play button (▶ PLAY)

⑫ Pause button (❚❚ PAUSE)

⑬ Stop button (■ STOP)
This button can be used to stop the disc play, as well as to cancel the various play modes.

⑭ Disc holder open/close button
(⏏ OPEN/CLOSE)


⑲
⑳
㉑
⑱
PRGM
⑰
LINK
88
TRACK
-88:88
NO.
MIN
SEC
㉒
㉓
⑯
EDIT
A
B
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
㉔
⑮
㉕

Indicators section

⑮ Tape side indicator (A/B)
Illuminates to show which cassette side, "A" or "B", has been selected with the tape-side select button.

⑯ Edit indicator (EDIT)
Illuminates when the edit tape length button is pressed and goes out when the stop button is pressed.

⑰ Link indicator (LINK)

⑱ Program indicator (PRGM)

⑲ Track number display (TRACK)

⑳ Time display (NO./MIN/SEC)

㉑ Repeat indicator (⟲)

㉒ Play indicator (▶)

㉓ Pause indicator (❚❚)

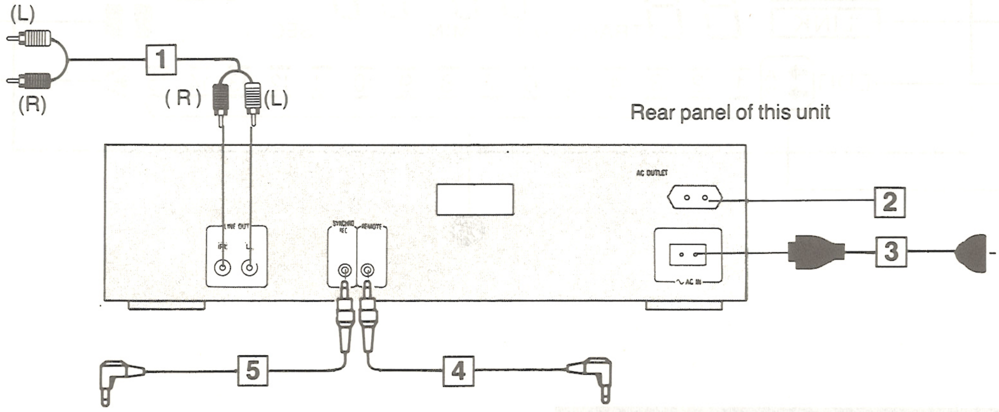
㉔ "Over" mark (⋗)
This indicator lights if the total number of tracks on the disc is 16 or more.

㉕ Music matrix (1 ~ 15)
The numbers of the tracks on the disc are displayed up to a maximum of 15.

■ CONNECTIONS

Notes:
- Turn power off on all components before making connections.
- See the operating instructions of the amplifier for details.

To "CD" terminals of the amplifier



To the "AC OUTLET" of the amplifier or the graphic equalizer, or to the household AC outlet

To the "SYNCHRO REC" terminal of the amplifier

To the "REMOTE CONTROL" terminal of the graphic equalizer or the tape deck

1 Stereo connection cable (included)

2 AC outlet (UNSWITCHED)

Power is always available, regardless of the unit's power switch setting.
This outlet is exclusively for the connection of other audio equipment, such as a tape deck, etc. Be sure the power consumption does not exceed the wattage specified near the AC outlet.

3 AC power supply cord (included)

Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

4 L-type cable (included)

This cable can be used only with a Technics graphic equalizer or a tape deck having the appropriate "REMOTE CONTROL" terminal.

5 L-type cable (included)

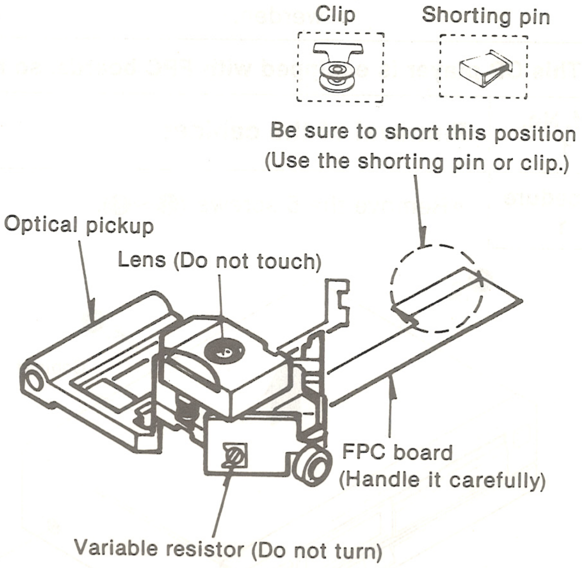
This cable can be used only with a Technics amplifier having the appropriate "SYNCHRO REC" terminal.

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

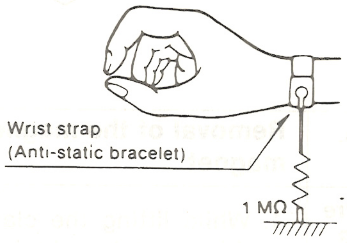
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. **(FPC board)**
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. **(FPC board)**
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

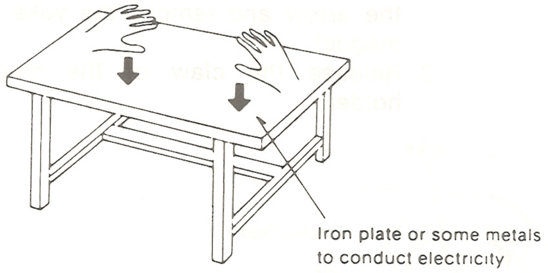

Clip
Shorting pin
Be sure to short this position
(Use the shorting pin or clip.)
Optical pickup
Lens (Do not touch)
FPC board
(Handle it carefully)
Variable resistor (Do not turn)

• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.


Wrist strap
(Anti-static bracelet)
1 MΩ

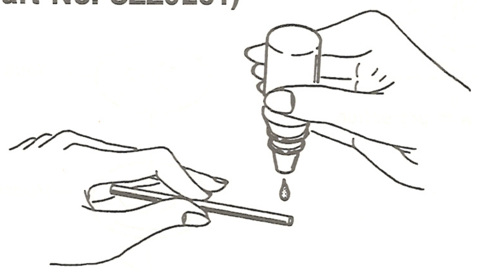

Iron plate or some metals
to conduct electricity

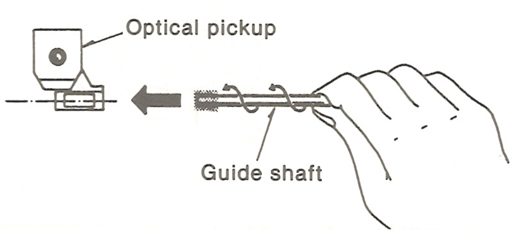
■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil. Since one application (one shaft) uses 0.05ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.




Optical pickup
Guide shaft

DISASSEMBLY INSTRUCTIONS

Warning: This product uses a laser diodes. Refer to caution statements on page 3.

ACHTUNG:
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

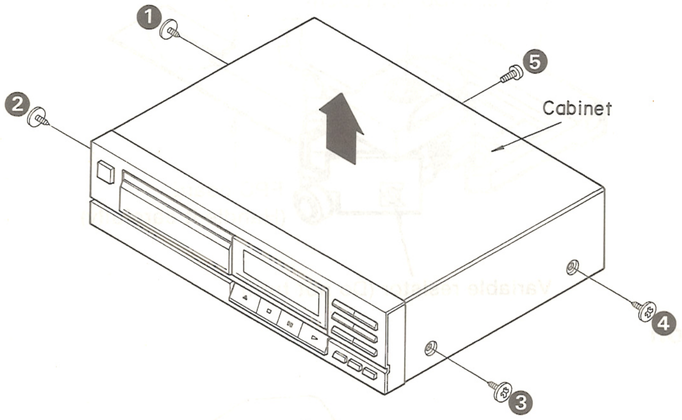
∗ This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.

Ref. No. 1

Removal of the cabinet

Procedure 1

- Remove the 5 screws (❶~❺).

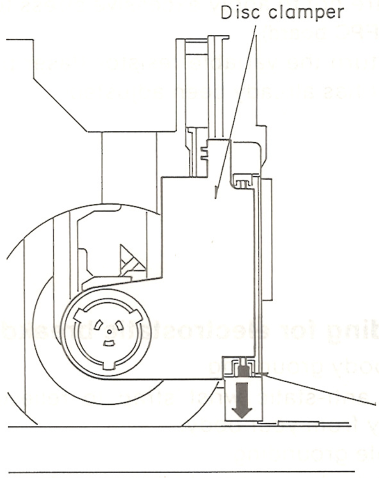

❶
❷
❸
❹
❺
Cabinet

Ref. No. 2

Removal of the disc clamper

Procedure 1→2

- Push the claw in the direction of the arrow and remove the disc clamper.

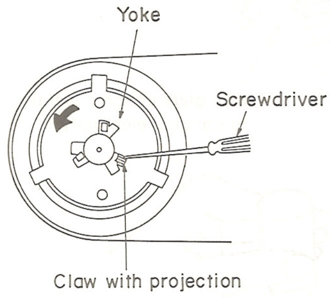

Disc clamper
Claw

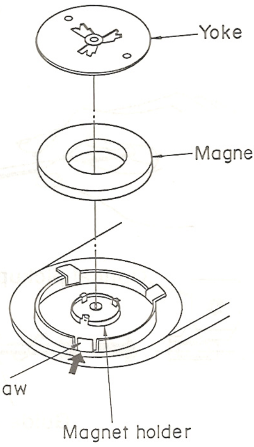
Ref. No. 3

Removal of the magnet holder and magnet

Procedure 1→2→3

1. While lifting the claw with a screwdriver, rotate yoke in the direction of the arrow and remove the yoke and magnet.
2. Release the claw of the magnet holder.


Yoke
Screwdriver
Claw with projection


Yoke
Magnet
Claw
Magnet holder

Ref. No. 4

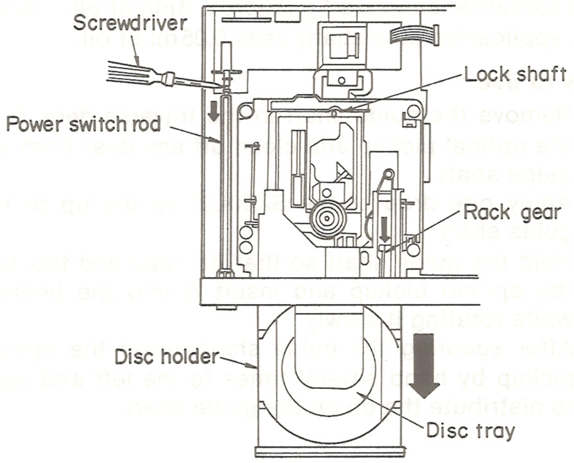
Removal of the disc holder and power switch rod

Procedure 1→2→4

- **Removal of the disc holder:**
  1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
  2. Pull out the disc holder further to remove it.

Note: Pull the lock shaft on the bottom panel to the "FREE" position.

- **Removal of the power switch rod:**
  1. Set the power switch to the "OFF" position.
  2. Remove the power switch rod by using a screwdriver.

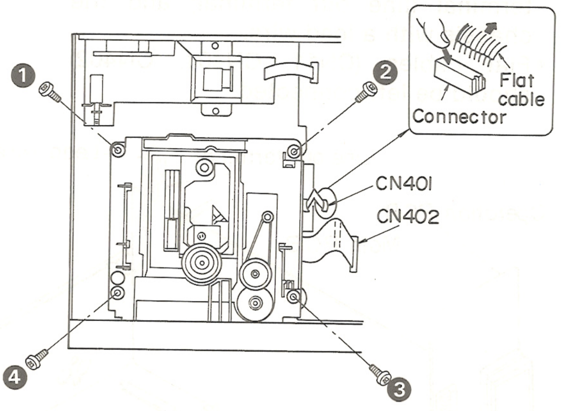

Screwdriver
Lock shaft
Power switch rod
Rack gear
Disc holder
Disc tray

Ref. No. 5

Removal of the loading unit

Procedure 1→2→4→5

1. Remove the 4 screws (❶~❹).
2. Remove the 2 flat cables (CN401, CN402).

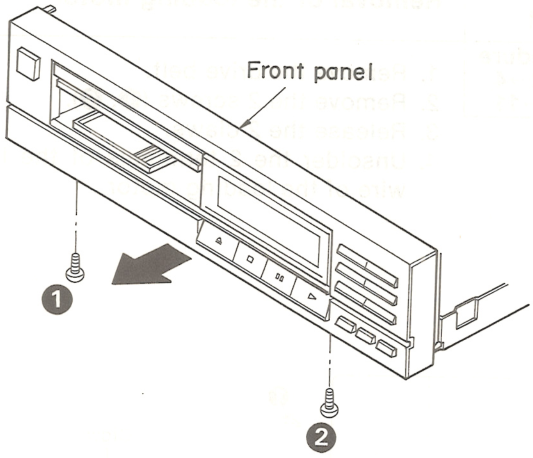

❶
❷
❸
❹
Flat cable
Connector
CN401
CN402

Ref. No. 7

Removal of the front panel

Procedure 1→2→4→7

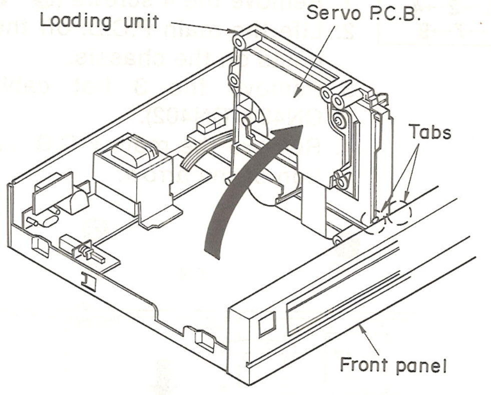
1. Remove the 2 screws (❶, ❷).
2. Remove the front panel in the direction of the arrow.


Front panel
❶
❷

Ref. No. 6

How to check the servo P.C.B.

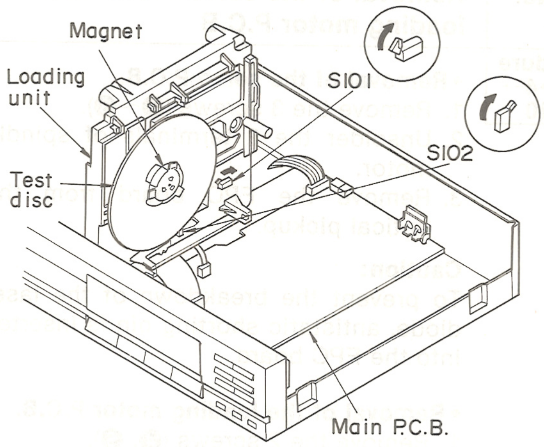
Procedure 5→6


Loading unit
Servo P.C.B.
Tabs
Front panel

- When checking the soldered surfaces of the servo P.C.B. and replacing the parts, do as shown.
- Flat cables (CN401 and CN402) should be left connected.

To play a disc

1. Place the test disc and magnet.
2. Switch the player on.
3. First push the Open/Close switch S102 in the direction of the arrow and then, within 4 seconds, push switch S101 in the direction of the arrow as shown in the figure.

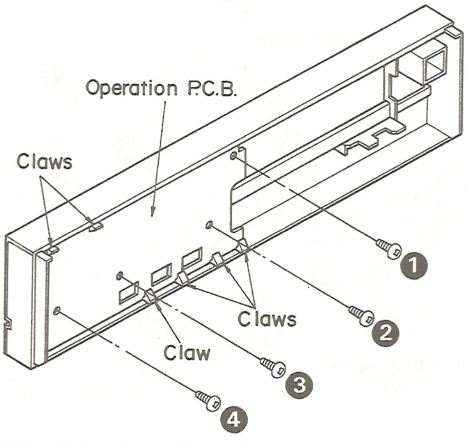

Magnet
Loading unit
Test disc
S101
S102
Main P.C.B.

Ref. No. 8

Removal of the operation P.C.B., headphones P.C.B. and timer switch P.C.B.

Procedure 1→2→4→7→8

1. Remove the 4 screws (❶~❹).
2. Release the 6 claws.

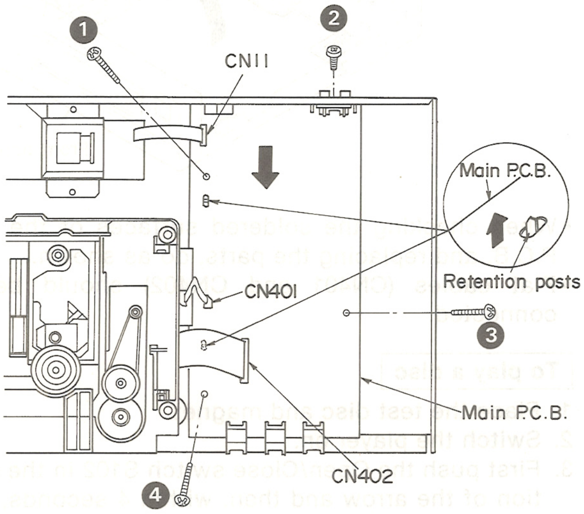

Operation P.C.B.
Claws
Claws
Claw
❶
❷
❸
❹

Ref. No.
9

Removal of the main P.C.B

Procedure
1→2→4
→7→9

1. Remove the 4 screws (❶~❹).
2. Life the main P.C.B. off the retention posts on the chassis.
3. Remove the 3 flat cables (CN11, CN401, CN402).
4. Remove the main P.C.B. in the direction of the arrow.

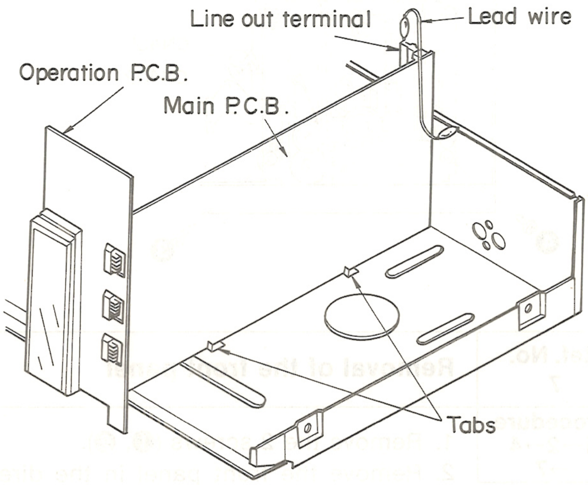

❶
❷
CN11
Main P.C.B.
Retention posts
CN401
❸
Main P.C.B.
CN402
❹

How to check the main P.C.B.

- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.

Cautions:

- Be sure to connect the P.C.B. ground terminal (line out terminal) and the chassis with a lead wire.
- Flat cables (CN11, CN401, CN402) should be left connected.


Line out terminal
Lead wire
Operation P.C.B.
Main P.C.B.
Tabs

Ref. No.
10

Removal of the servo P.C.B. and loading motor P.C.B

Procedure
1→2→4→
5→10

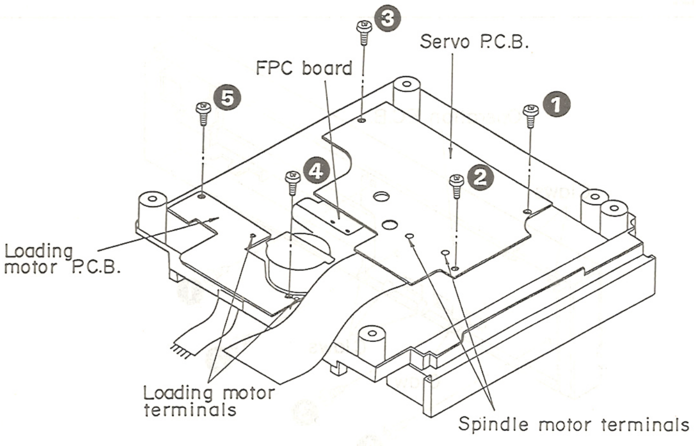
• Removal of the servo P.C.B.

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

Caution:
To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

• Removal of the loading motor P.C.B.

1. Remove the 2 screws (❹, ❺).
2. Unsolder the 2 terminals of loading motor.

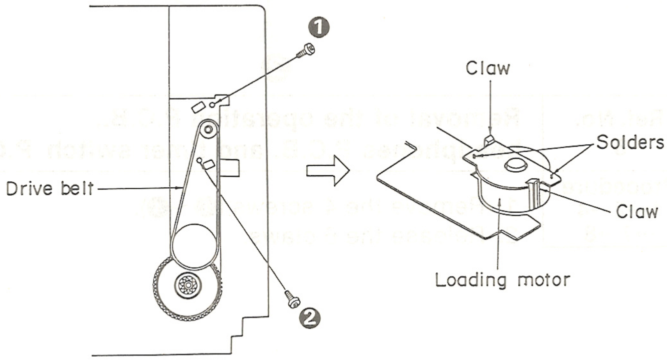

❸
Servo P.C.B.
FPC board
❺
❶
❹
❷
Loading motor P.C.B.
Loading motor terminals
Spindle motor terminals

Ref. No.
11

Removal of the loading motor

Procedure
1→2→4
→5→11

1. Remove the drive belt.
2. Remove the 2 screws (❶, ❷).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the lead wire of the loading motor.


❶
Claw
Solders
Drive belt
Claw
Loading motor
❷

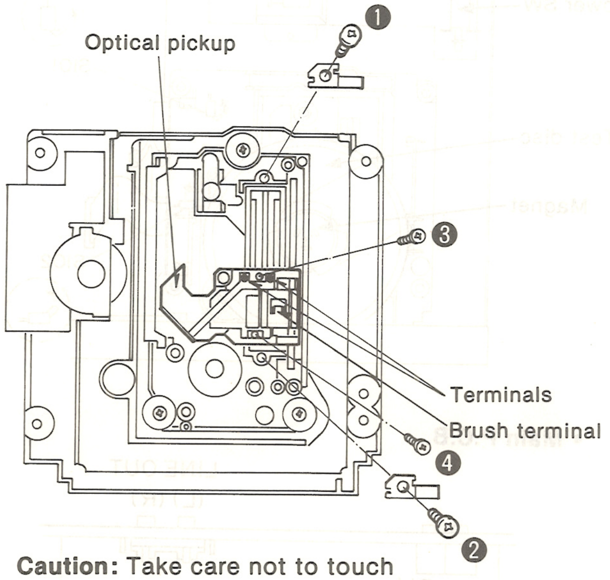
Ref. No. 12

Removal of the optical pickup

Procedure 10→12

Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 7).

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).


Optical pickup
❶
❸
Terminals
Brush terminal
❹
❷

Caution: Take care not to touch the brush terminal.

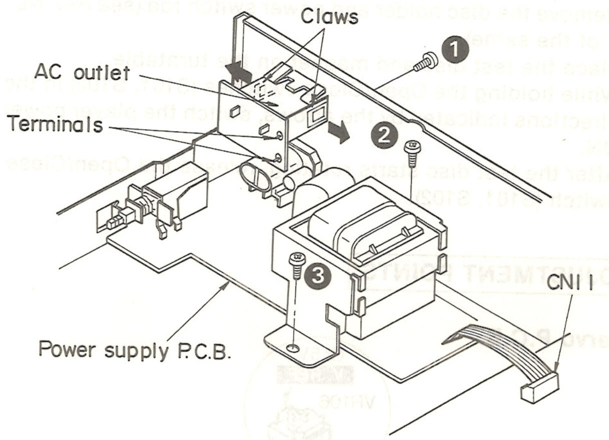
Ref. No. 13

Removal of the power supply P.C.B

Procedure 1→2→4 →13

- **Removal of the power supply P.C.B.**
1. Remove the 3 screws (❶~❸).
2. Remove the flat cable (CN11).
3. Unsolder the 2 terminals.

- **Removal of the AC outlet**
1. Unsolder the 2 terminals.
2. Release the 2 claws.

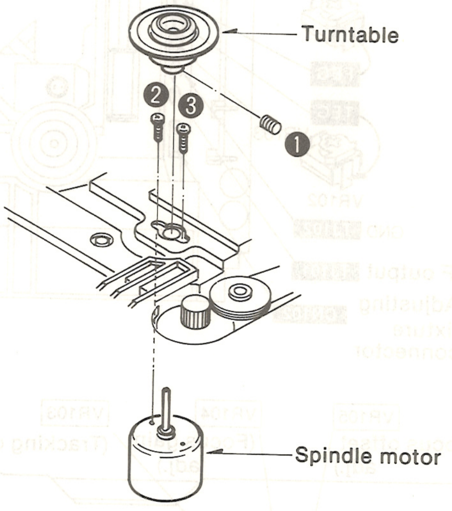

Claws
❶
AC outlet
Terminals
❷
❸
CN11
Power supply P.C.B.

Ref. No. 14

Removal of the spindle motor

Procedure 10→14

1. Loosen the screw (❶) by using a 1.27 mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

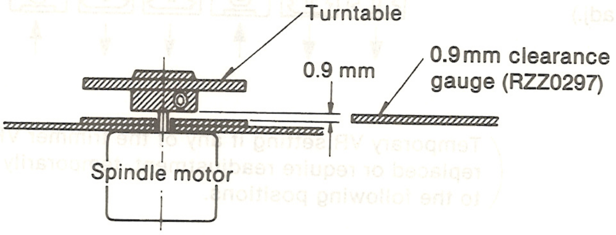

Turntable
❷
❸
❶
Spindle motor

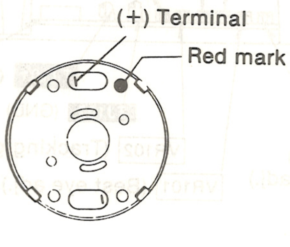
Caution:

1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height

1. Insert a 0.9 mm clearance gauge (RZZ0297) between the turntable and loading base as shown below.


Turntable
0.9 mm
0.9mm clearance gauge (RZZ0297)
Spindle motor


(+) Terminal
Red mark

2. Tighten the turntable set-screw by using a 1.27 mm allen wrench.

Caution:

Refer to turntable height adjustment (see page 13).

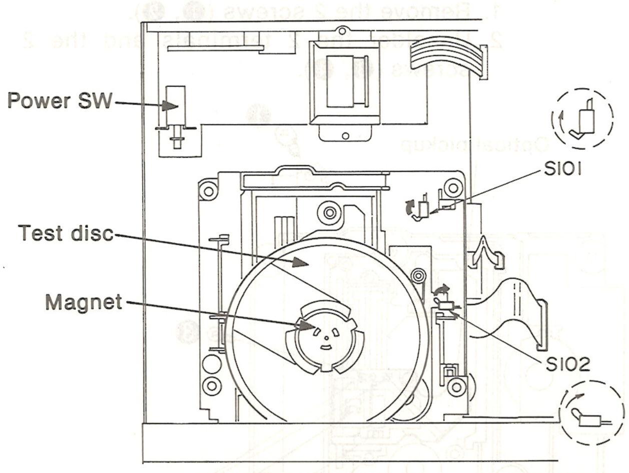
MEASUREMENTS AND ADJUSTMENTS

Caution:

- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

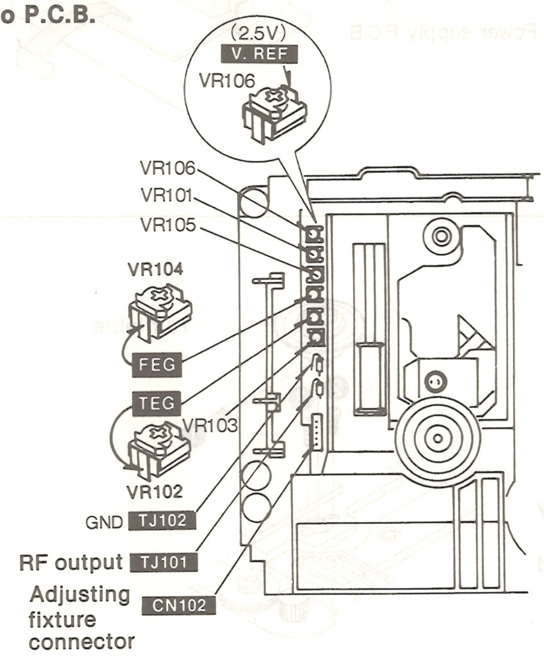
PREPARATION

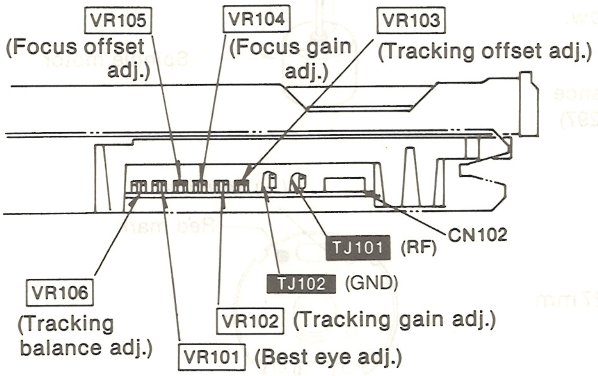
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clamper and magnet (see Ref. No. 2 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 3 of the same).
4. Place the test disc and magnet on the turntable.
5. While holding the Open/Close switches (S101, S102) in the directions indicated by the arrows, switch the player power ON.
6. After the test disc starts rotating, release the Open/Close switch (S101, S102).


Power SW
Test disc
Magnet
S101
S102

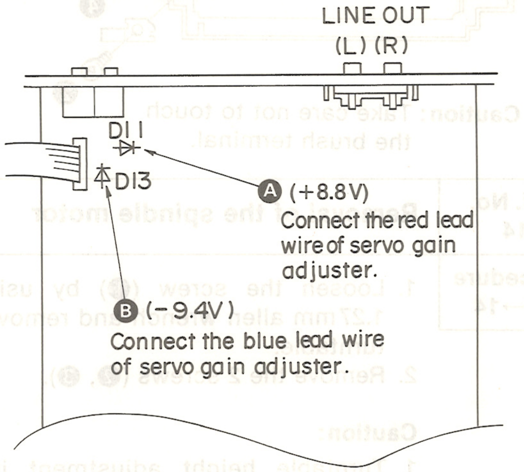
ADJUSTMENT POINTS

• Servo P.C.B.

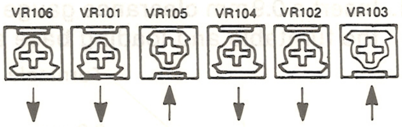

(2.5V)
V. REF
VR106
VR106
VR101
VR105
VR104
FEG
TEG
VR103
VR102
GND TJ102
RF output TJ101
Adjusting fixture connector CN102


VR105 (Focus offset adj.)
VR104 (Focus gain adj.)
VR103 (Tracking offset adj.)
CN102
TJ101 (RF)
TJ102 (GND)
VR106 (Tracking balance adj.)
VR102 (Tracking gain adj.)
VR101 (Best eye adj.)

• Main P.C.B.


LINE OUT
(L) (R)
D11
D13
Ⓐ (+8.8V) Connect the red lead wire of servo gain adjuster.
Ⓑ (−9.4V) Connect the blue lead wire of servo gain adjuster.

• Temporary setting of each VR


VR106
VR101
VR105
VR104
VR102
VR103

Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.

Measuring Instruments and Special Tools

- * Servo gain adjuster (SZZP1017F or SZZP1094C) ...Refer to page 16.
- * Test discs
  1. Playability test disc (SZZP1054C or SZZP1014F)
  2. Uneven test disc (SZZP1056C)
  3. Black band test disc (SZZP1057C)
- * Normal disc
- * Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1:1 probe).
- * Audio frequency (AF) oscillator
- * Adapter (SZZP1032F)
- * Allen wrench (M2.0) (SZZP1101C)
- * Allen wrench (M1.27)
- * 0.9mm clearance gauge (RZZ0297)

As to the replacement of the following parts, refer to the specified sections for adjustment.

(1) Spindle motor.................. Sections (1), (3) to (8)
(2) Turntable........................ .Sections (1), (3) to (8)
(3) Optical pickup .... Sections (2) to (8)

Adjusting Procedure

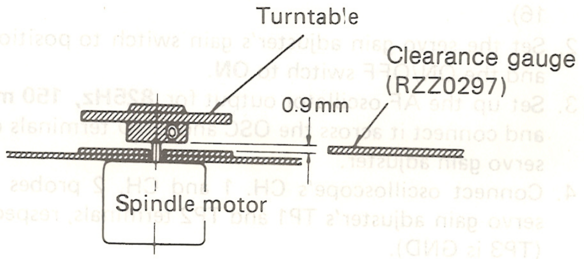
* If you have replaced the spindle motor or turntable, perform the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (−) terminals.
   (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
   Oscilloscope setting: VOLT .... 50 mV
   SWEEP .... 1 ms.
   Input coupling . . . DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the DC level displayed on the oscilloscope.

Note 1. If the measured amplitude is within a range of +/− 15mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.

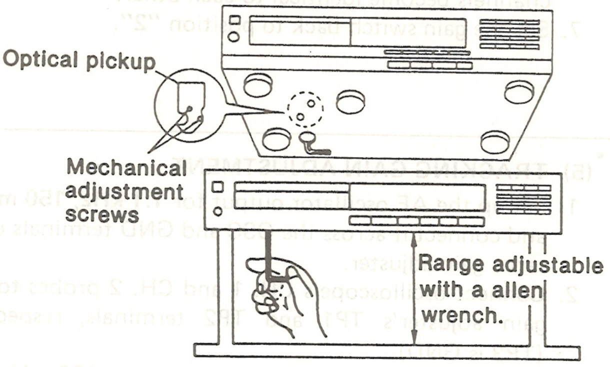
If the amplitude exceeds +15mV, lower turntable.
If the amplitude is below −15mV, elevate the turntable.

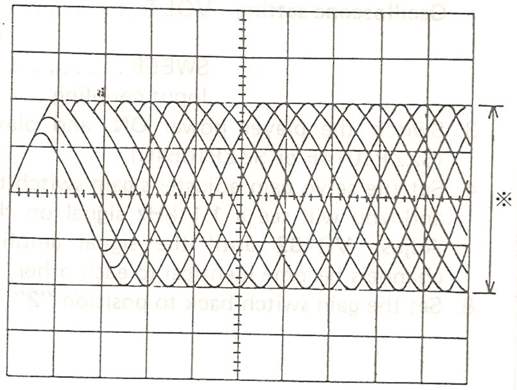


Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT .... 100 mV
   SWEEP .... 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench until the RF signal amplitude variation on the oscilloscope is minimized.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).


Optical pickup
Mechanical adjustment screws
Range adjustable with a allen wrench.

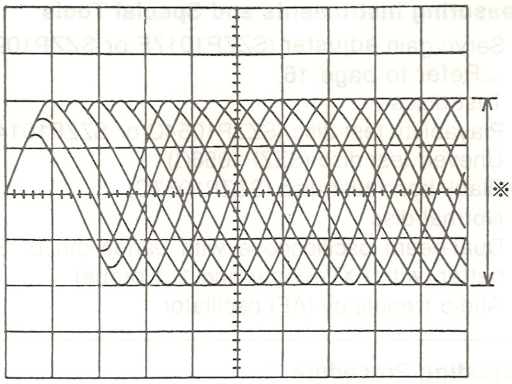


※ Minimize the variation of amplitude.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B.

   Oscilloscope setting: VOLT 100mV
   SWEEP . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play the **0.5** mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.

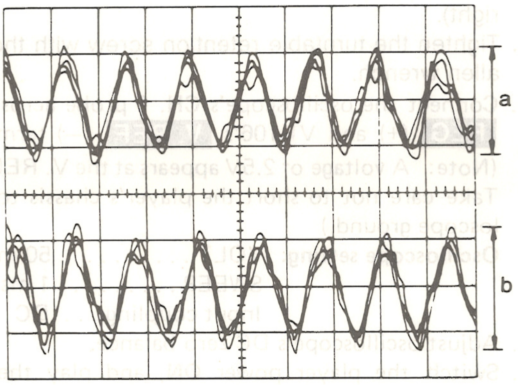


※ Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

1. Connect the servo gain adjuster to the player (see page 16).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p,** and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).

   Oscilloscope setting: VOLT . . . . 100 mV
   (both channels)
   SWEEP . . . . 1 ms.
   Input coupling . . . AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a **825** Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position **"2"**.

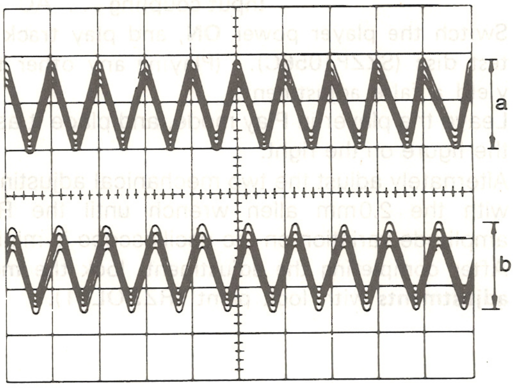


※ Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p,** and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).

   Oscilloscope setting: VOLT . . . . 100 mV
   (both channels)
   SWEEP . . . . 1 ms.
   Input coupling . . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position **"2"**.

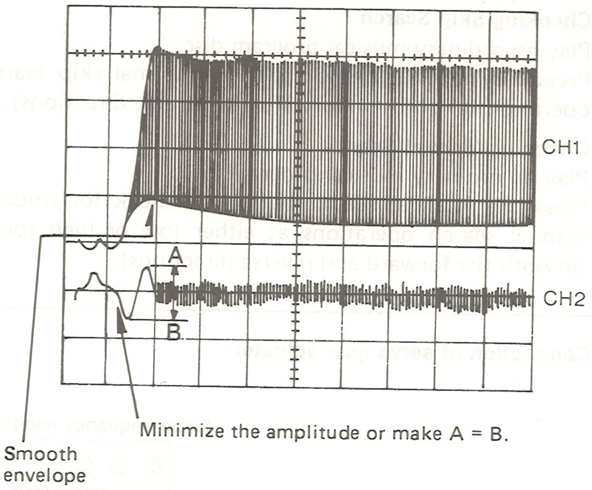


※ Adjust VR102 until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

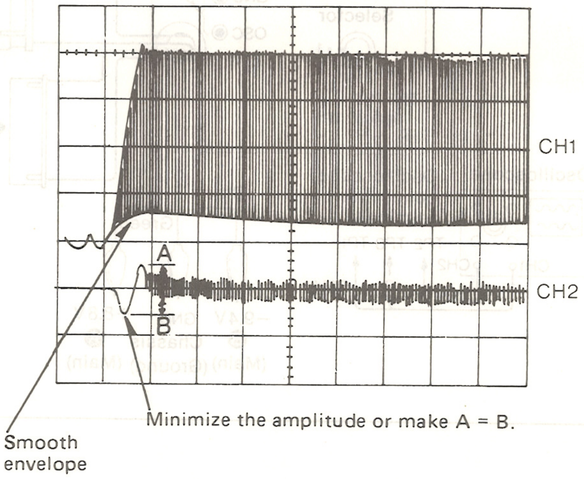
1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's FEG terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. 0.5ms
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(7) TRACKING OFFSET ADJUSTMENT

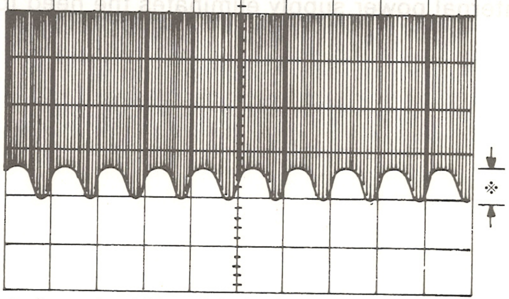
Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's TEG terminal.
   Oscilloscope setting: VOLT. . . . . .100mV (CH. 1)
   200mV (CH. 2)
   SWEEP. . . . . .0.5ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that servo gain adjuster's gain switch is set to position "2".
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   SWEEP. . . . . . . .0.5ms.
   Input coupling . .AC (both CH. 1 and 2)
   Trigger mode . . .NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position "1", and adjust **VR106** until the jitter contained in the signal waveform on CH. 1 is minimized as shown below.
6. Disconnect the servo gain adjuster's leads from the player.



✻ Jitter should be minimized.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

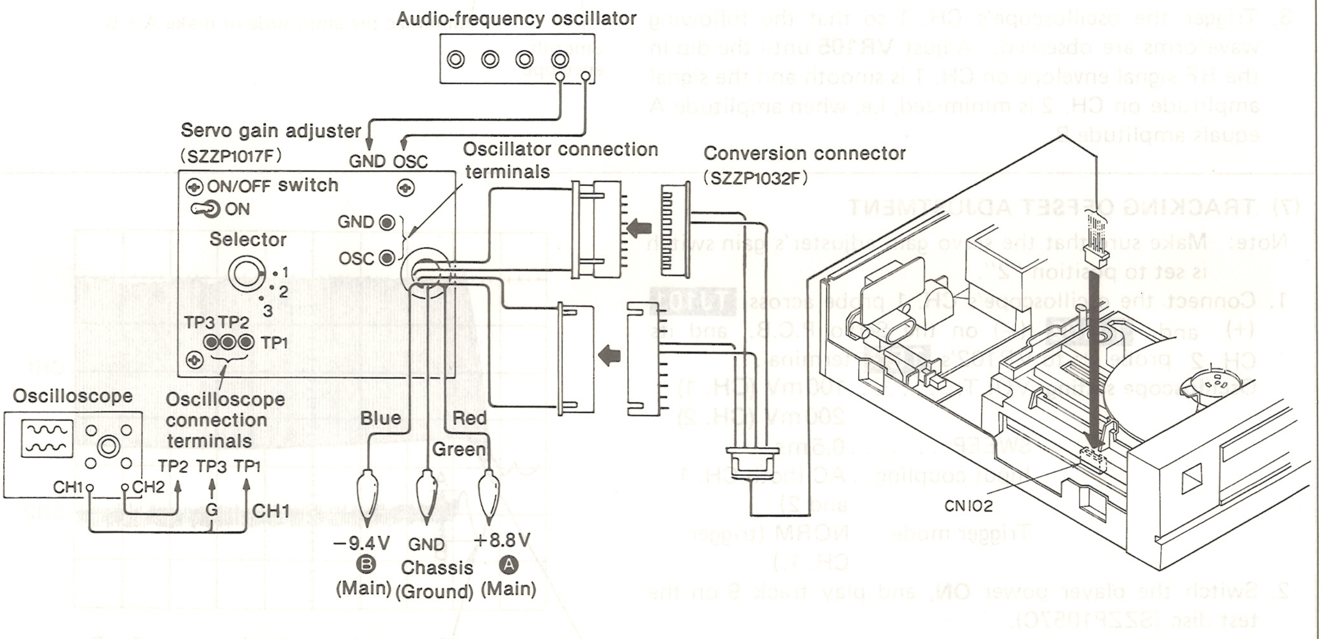
* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

* **Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

- **Connection of servo gain adjuster**


Audio-frequency oscillator
Servo gain adjuster
(SZZP1017F)
GND
OSC
Oscillator connection terminals
Conversion connector
(SZZP1032F)
ON/OFF switch
ON
Selector
1
2
3
GND
OSC
TP3
TP2
TP1
Oscilloscope
Oscilloscope connection terminals
TP2
TP3
TP1
CH1
CH2
G
CH1
Blue
Red
Green
−9.4V
Ⓑ
(Main)
GND
Chassis
(Ground)
+8.8V
Ⓐ
(Main)
CN102

NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C

Features:

(1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
(2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
(3) Internal power supply eliminates the need for power supply from the CD player.

■ TERMINAL FUNCTIONS OF IC's

- **IC101 (AN8373S): Servo amp.**

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/tracking gain down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+4.9V input)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor input
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK
22	VDD	I	Power supply (+4.9V input)
23	SPCNT	O	Track crossing speed control output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus servo ON signal)
31	CNT2	I	Control input (TRON: Tracking servo ON signal)
32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+4.9V input)
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC103 (AN8377): BTL drive

Pin No.	Mark	I/O Division	Function
1	PVCC	I	Driver power supply (+8.8V input)
2	VCC	I	Power supply (+8.8V input)
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input
9	TD–	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD–	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD–	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND)

• IC301 (MN6625): Digital signal processing

Pin No.	Mark	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not used, open)
2	FCLK	O	Crystal frame clock (Not used, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H") (Not used, open)
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344 MHz) output (Not used, open)
13	TEST	I	Test mode selection (Not used, connected to +4.9 V)
14	TX	O	Digital signal output (Not used, open)
15	SLEEP	I	Mode selector ("L": normal, "H": SLEEP mode) (Not used, connected to GND)
16	CSEL	I	Test terminal ("L": normal) (Not used, connected to GND)
17	X1	I	Clock input (16.9344 MHz)
18	X2	O	Clock output (16.9344 MHz) (Not used, open)
19	VSS	I	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75 Hz)
21	$\overline{\mathrm{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35 kHz)
22	$\overline{\mathrm{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\mathrm{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\mathrm{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336 MHz)
33	VDD	I	Power supply (connected to +4.9 V)
34	MEMP	I	Emphasis signal input
35	FG	I	Spindle motor FG signal input (Not used, open)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218 MHz)
43	FPC	O	PLL frequency comparision signal
44 ≀ 51	D7 ≀ D0	I/O	16 K RAM data input/output
52	RAM/OE	O	16 K RAM $\overline{\mathrm{OE}}$ signal
53	RAM/WE	O	16 K RAM $\overline{\mathrm{WE}}$ signal
54 ≀ 64	RAM/A0 ≀ RAM/A10	O	16 K RAM address signal (RAMA0: LSB, RAMA10: MSB)

•IC401 (MN1554PEZ-1): System control

Pin No.	Mark	I/O Division	Function
1	BRECV	——	(Not used, open)
2	BSEND	——	(Not used, open)
3	SYNC	O	(Not used, open)
4	SIRQ	I	Not used (connected to +4.9V)
5	BLKCK	I	Sub-code block (Q data) clock input (75 Hz)
6	CLDCK	I	Sub-code block (Q data) clock input (7.35 kHz)
7	SBO	I	(Not used, open)
8	SUBQ	I	Sub-code (Q data) input
9	RST	I	Reset signal input
10 ∫ 13	P20 ∫ P23	O	Not used (connected to +4.9V)
14	CLOSE	O	Loading motor "Close" command
15	OPEN	O	Loading motor "Open" command
16	SLOW	O	(Not used, open)
17	MUTE	O	Muting control
18	SEEK	O	Traverse servo control (Not used, open)
19	NC	—	Not connected
20	TRV.R	O	Traverse "Reverse" command signal
21	TRV.F	O	Traverse "Forward" command signal
22	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
23	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)
25	VDD	I	Power supply (connected to +4.9V)
26	DOWN	O	(Not used, open)
27	UP	O	(Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)
29	CLOSE SW	I	Disc holder "Open" detection
30	OPEN SW	I	Disc holder "Close" detection
31	BCLK	I	(Not used, connected to GND)
32	BDATA	I	(Not used, connected to GND)
33	STAT	I	Processing status input from signal processing LSI
34	COMP	O	TOC reading control (ON at "L") (Not used, connected to GND)
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Optical servo condition (track cross) input
37	RECV	I	Data receipt command signal
38	SEND	I	Data transmission command signal
39	ACK	I	Data discrimination signal
40	CLK	I	Data lock signal
41 ∫ 44	DATA0 ∫ DATA3	I	Key scan signal
45 ∫ 52	NC	I	Not connected
53	OSC2	I	Clock terminal
54	OSC1	I	Clock input
55	X1	I	Optical servo condition input
56	X0	O	(Not used, open)
57	GND	I	GND terminal
58	DMUTE	O	Muting control
59	MDATA	O	Command data output
60	MCLK	O	Data clock output (command clock signal)
61	MLD	O	Data output (command load signal)
62	DOUTON	O	Optical output control signal (Not used, open)
63	EMPH	O	Emphasis signal output
64	NC	——	Not connected

- **IC601 (MN15283PJH): FL drive and timing signal generator**

Pin No.	Mark	I/O Division	Function
1	VSS	I	GND terminal
2	X0	O	(Not used, open)
3	XI	I	Optical servo condition input (Not used, open)
4 ~ 7	P00 ~ P03	O	Key scan signal
8	P10(CLK)	O	Data lock signal
9	P11(ACK)	O	Data discrimination signal
10	P12(SEND)	O	Data transmission command signal
11	P13(RECV)	O	Data receipt command signal
12	$\overline{SYNC}$	O	(Not used, open)
13	$\overline{RST}$	I	Reset signal input (reset at "L")
14	$\overline{IRQ/TC1}$	I	Sub-code block (Q data) clock (75 Hz) input (Not used, open)
15 ~ 18	P50 ~ P53	I	Key return signal
19	$\overline{SBT}$	I	Sub-code frame clock (7.35 kHz) (Not used, open)
20	$\overline{SBD}$	I	Sub-code Q data input (Not used, open)
21 ~ 24	P20 ~ P23	O	Key scan signal
25	P30	O	Key scan signal
26	P31	O	Key scan signal
27	P32	I	(Not used, open)
28	P33	—	(Not used, open)
29	P40	I	Key return signal
30	P41	I	(Not used, connected to +5V)

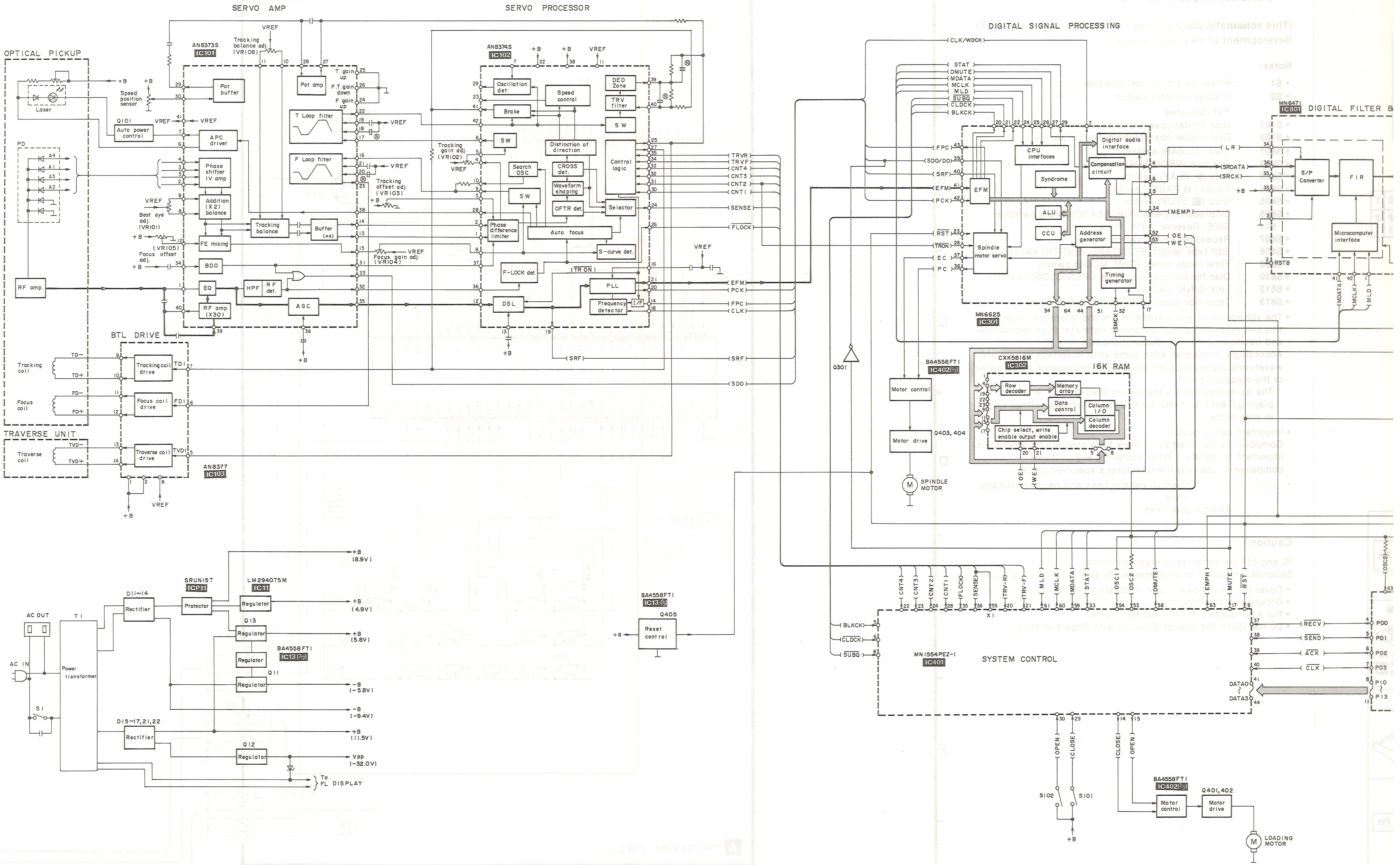
Pin No.	Mark	I/O Division	Function
31, 32	P42 • P43	I	(Not used, open)
33	PE0	O	Synchro rec control terminal
34	PE1	O	
35	P60	O	(Not used, open)
36	P61	O	FL drive power supply (connected to −32.0V)
37	DAC	O	(Not used, open)
38	VPP	I	FL drive power supply (Not used, open)
39	D0	O	FL grid signal
40	D1	O	FL grid signal
41	D2	O	FL grid signal
42	D3	O	FL grid signal
43 ~ 48	D4 ~ D9	O	FL grid signal
49 • 50	DA • DB	O	FL grid signal (Not used, open)
51	DC	O	FL grid signal
52	DD	O	FL grid signal
53 ~ 61	S8 ~ S0	O	FL anode signal
62	VDD	I	Power supply (connected to +4.9V)
63	OSC2	I	Clock terminal
64	OSC1	I	Clock input

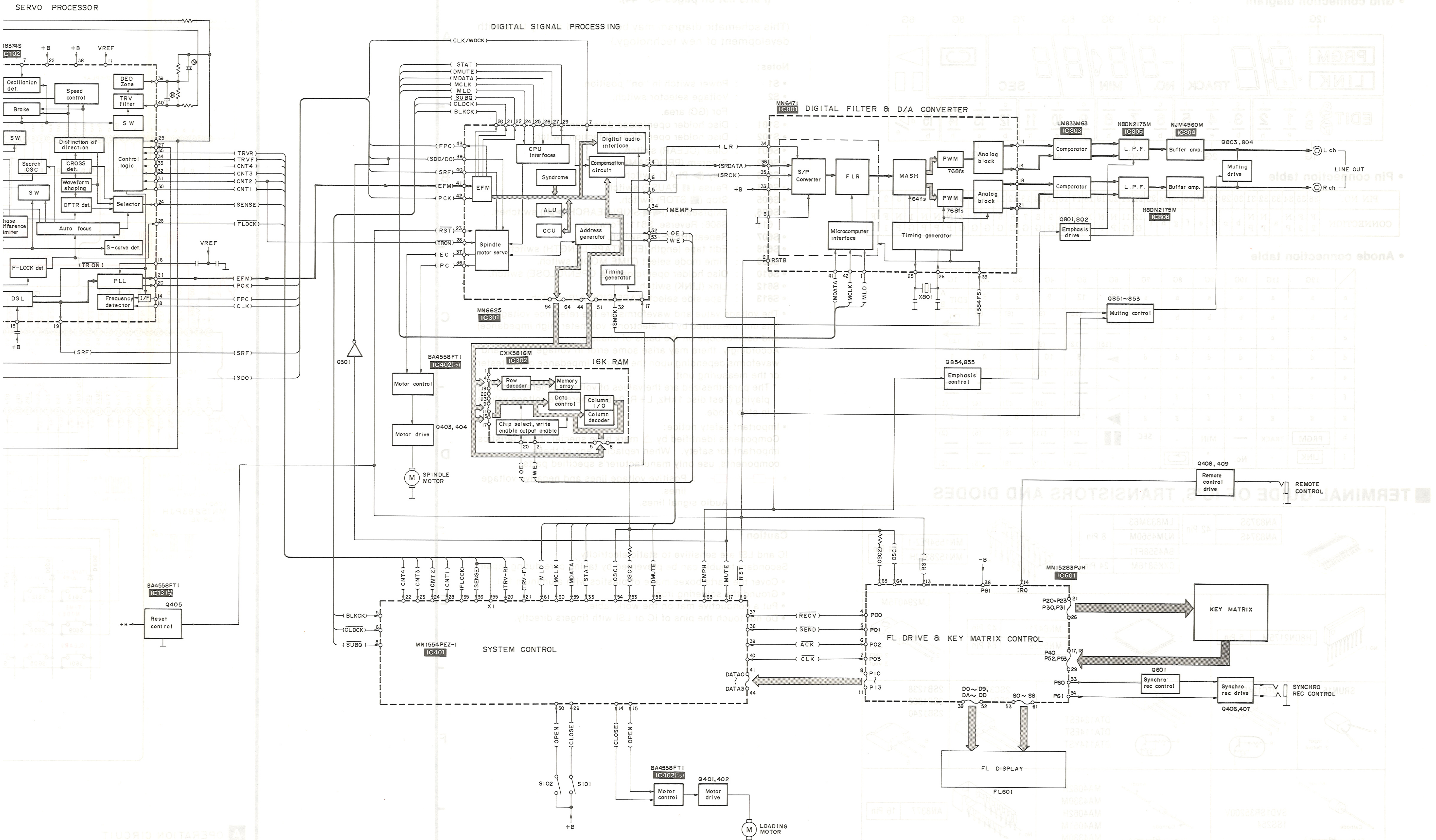
• IC801 (MN6471): Digital filter and D/A converter

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset signal input (reset at "L")
3	IE	I	I^2S select terminal ("H"=I^2S) (connected to GND)
4	TP1	—	TEST terminal (Not connected)
5	TP2	—	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	—	Not connected
9	NC	—	Not connected
10	AVDD4	I	Power supply (connected to +5.8V)
11	OUTL (−)	O	Lch data output, (−) terminal
12	AVSS4	I	GND terminal
13	AVSS3	I	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply (connected to +5.8V)
16	NC	—	Not connected
17	AVDD2	I	Power supply (connected to +5.8V)
18	OUTR (−)	O	Rch data output, (−) terminal
19	AVSS2	I	GND terminal (analog system)
20	AVSS1	I	GND terminal (analog system)
21	OUTR (+)	O	Rch data output, (+) terminal

Pin No.	Mark	I/O Division	Function
22	AVDD1	I	Power supply (connected to +5.8V)
23	DVDD1	I	Power supply (connected to +4.9V)
24	DVSS1	I	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	—	Not used, connected to GND
28	DVDD2	I	Power supply (connected to +4.9V)
29	DVSS2	I	GND terminal (digital system)
30	NSUB	I	Power supply (connected to +4.9V)
31	768fs	O	768 fs (Not used)
32	192fs	O	192 fs (Not used)
33	LRPOL	I	LR clock selector (connected to +4.9V)
34	LR	I	L/R clock
35	SRCK	I	Serial data best clock
36	SRDATA	I	Serial data input (MSB first)
37	DVSS 3	I	GND terminal (digital system)
38	DVDD3	—	Power supply (connected to +4.9V)
39	384 fs	O	384 fs (16.9344MHz) output
40	PD	I	Power down terminal (connected to GND)
41	MDATA	I	Command data input
42	MCLK	I	Command clock input

BLOCK DIAGRAM

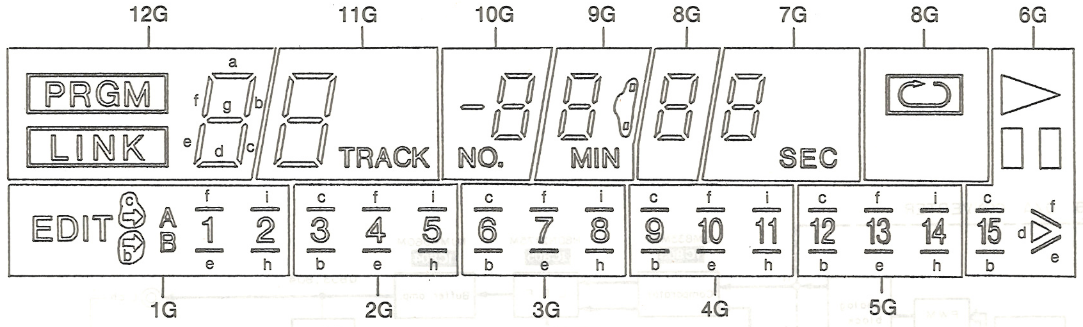

SERVO AMP
SERVO PROCESSOR
DIGITAL SIGNAL PROCESSING
DIGITAL FILTER
OPTICAL PICKUP
Laser
Speed position sensor
Q101 Auto power control
PD
RF amp.
Tracking coil
Focus coil
TRAVERSE UNIT
Traverse coil
AN8373S IC101
Pot buffer
APC driver
Phase shifter IV amp
Addition (X2) balance
Best eye adj. (VR101)
Focus offset adj. (VR105)
FE mixing
BDO
EQ
RF amp (X30)
HPF
RF det.
AGC
Tracking balance
Tracking balance adj. (VR106)
Buffer (X4)
Pot amp
T gain up
F.T. gain down
F gain up
T Loop filter
F Loop filter
Tracking offset adj. (VR103)
Focus gain adj. (VR104)
Tracking gain adj. (VR102)
BTL DRIVE
Tracking coil drive
Focus coil drive
Traverse coil drive
AN8377 IC103
AN8374S IC102
Oscillation det.
Speed control
Brake
SW
Distinction of direction
CROSS det.
Waveform shaping
OFTR det.
Search OSC
Phase difference limiter
Auto focus
F-LOCK det.
DSL
DED Zone
TRV filter
Control logic
Selector
S-curve det.
PLL
Frequency detector
I/F
(TR ON)
VREF
+B
TRVR
TRVF
CNT4
CNT3
CNT2
CNT1
SENSE
FLOCK
EFM
PCK
FPC
CLK
SRF
SDO
CLK/WDCK
STAT
DMUTE
MDATA
MCLK
MLD
SUBQ
CLDCK
BLKCK
SDO/DO
RST
TRON
EC
PC
EFM
CPU interfaces
Digital audio interface
Compensation circuit
Syndrome
ALU
CCU
Address generator
Timing generator
Spindle motor servo
MN6625 IC301
LR
SRDATA
SRCK
MEMP
OE
WE
RSTB
SMCK
MN6471 IC801
S/P Converter
FIR
Microcomputer interface
CXK5816M IC302
16K RAM
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable output enable
Q301
BA4558FT1 IC402(1/2)
Motor control
Motor drive
Q403, 404
SPINDLE MOTOR
MN1554PEZ-1 IC401
SYSTEM CONTROL
X1
OSC1
OSC2
EMPH
MUTE
RECV
SEND
ACK
DATA0 ~ DATA3
P00
P01
P02
P03
P10 ~ P13
OPEN
CLOSE
S102
S101
BA4558FT1 IC402(2/2)
Q401,402
LOADING MOTOR
AC OUT
AC IN
S1
T1
Power transformer
D11~14
Rectifier
SRUN15T ICP11
Protector
LM2940T5M IC11
Regulator
Q13
BA4558FT1 IC13(2/2)
Q11
D15~17,21,22
Q12
+B (8.9V)
+B (4.9V)
+B (5.8V)
-B (-5.8V)
-B (-9.4V)
+B (11.5V)
Vpp (-32.0V)
To FL DISPLAY
BA4558FT1 IC13(1/2)
Q405
Reset control


SERVO PROCESSOR
IC102
Oscillation det.
Speed control
DED Zone
TRV filter
SW
Brake
Distinction of direction
Control logic
CROSS det.
Search OSC
Waveform shaping
OFTR det.
Selector
Auto focus
S-curve det.
Phase difference limiter
F-LOCK det.
PLL
DSL
Frequency detector
I/F
VREF
+B
TRVR
TRVF
CNT4
CNT3
CNT2
CNT1
SENSE
FLOCK
TRON
EFM
PCK
FPC
CLK
SRF
SDO
Q301
DIGITAL SIGNAL PROCESSING
CLK/WDCK
STAT
DMUTE
MDATA
MCLK
MLD
SUBQ
CLDCK
BLKCK
CPU interfaces
Digital audio interface
Compensation circuit
Syndrome
ALU
CCU
Address generator
EFM
Spindle motor servo
Timing generator
MN6625
IC301
RST
TRON
EC
PC
LR
SRDATA
SRCK
MEMP
OE
WE
SMCK
CXK5816M
IC302
16K RAM
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable output enable
BA4558FT1
IC402(½)
Motor control
Motor drive
Q403, 404
SPINDLE MOTOR
MN6471
IC801
DIGITAL FILTER & D/A CONVERTER
S/P Converter
FIR
MASH
PWM
768fs
64fs
Analog block
Microcomputer interface
Timing generator
RSTB
MDATA
MCLK
MLD
X801
384FS
LM833M63
IC803
Comparator
H8DN2175M
IC805
L.P.F.
NJM4560M
IC804
Buffer amp.
H8DN2175M
IC806
Q803, 804
L ch
R ch
LINE OUT
Muting drive
Q801, 802
Emphasis drive
Q851~853
Muting control
Q854, 855
Emphasis control
Q408, 409
Remote control drive
REMOTE CONTROL
BA4558FT1
IC13(½)
Q405
Reset control
MN1554PEZ-I
IC401
SYSTEM CONTROL
CNT4
CNT3
CNT2
CNT1
FLOCK
SENSE
TRV-R
TRV-F
MLD
MCLK
MDATA
STAT
OSC1
OSC2
DMUTE
EMPH
MUTE
RST
X1
BLKCK
CLDCK
SUBQ
DATA0 ~ DATA3
OPEN
CLOSE
S102
S101
BA4558FT1
IC402(½)
Motor control
Q401, 402
Motor drive
LOADING MOTOR
MN15283PJH
IC601
FL DRIVE & KEY MATRIX CONTROL
RECV
SEND
ACK
CLK
P00
P01
P02
P03
P10 ~ P13
P61
IRQ
P20~P23
P30, P31
P40
P52, P53
P60
P61
KEY MATRIX
Q601
Synchro rec control
Synchro rec drive
Q406, 407
SYNCHRO REC CONTROL
D0~D9, DA~DD
S0~S8
FL DISPLAY
FL601

Note)
- → Audio signal

INTERNAL CONNECTION OF FL

- **Grid connection diagram**


12G
11G
10G
9G
8G
7G
8G
6G
PRGM
LINK
TRACK
NO.
MIN
SEC
EDIT
A
B
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
a b c d e f g h i
1G
2G
3G
4G
5G

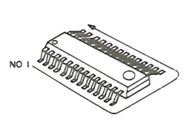
- **Pin connection table**

PIN NO.	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	a	NP	NP	b	c	d	e	f	g	h	i	12G	11G	NP	NP	NP	NP	10G	9G	8G	7G	6G	5G	4G	3G	2G	NP	NP	NP	1G	NP	F1	F1

- **Anode connection table**

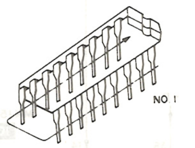
	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	15	12	9	6	3	EDIT A B
b	b	b	b	b	b	b	(15) —	(12) —	(9) —	(6) —	(3) —	(下) →
c	c	c	c	c	c	c	— (15)	— (12)	— (9)	— (6)	— (3)	→ (上)
d	d	d	d	d	d	d	▶	13	10	7	4	1
e	e	e	e	e	e	e	/	(13) —	(10) —	(7) —	(4) —	(1) —
f	f	f	f	f	f	f	\	— (13)	— (10)	— (7)	— (4)	— (1)
g	g	g	g	g	g	g	▶	14	11	8	5	2
h	PRGM	TRACK	—	MIN	-	SEC	▮▮	(14) —	(11) —	(8) —	(5) —	(2) —
i	LINK	-	No.	:	⊂⊃	-	-	— (14)	— (11)	— (8)	— (5)	— (2)

TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

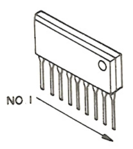


AN8373S	42 Pin
AN8374S	

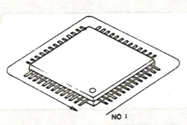
LM833M63	8 Pin
NJM4560M	
BA4558FT1	
CXK5816M	24 Pin



MN1554PEZ-1	64 Pin
MN15283PJH	

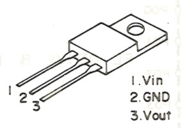


H8DN2175M	5 Pin

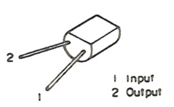


MN6471	42 Pin
MN6625	64 Pin

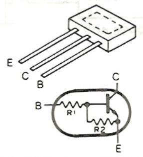
LM2940T5M

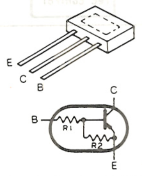

1
2
3
1.Vin
2.GND
3.Vout

SRUN15


2
1
1 Input
2 Output

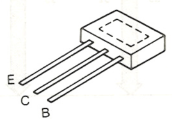
DTC124EST


E
C
B
C
B
R1
R2
E

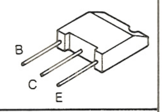

E
C
B
C
B
R1
R2
E

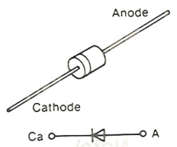
DTA124EST
DTA114EST
DTA114YST

2SC3311
2SD1450

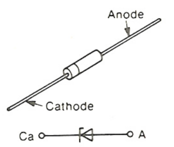


2SB1238
2SD1862
2SB1240

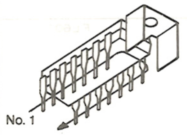



Anode
Cathode
Ca
A

SVD1SR35200V
1SS254


Anode
Cathode
Ca
A

MA4082H
MA4330M
MA4062H
MA4051M
MA4330M



AN8377	16 Pin

SCHEMATIC DIAGRAM

(Parts list on pages 40~44).

(This schematic diagram may be modified at any time with development of new technology.)

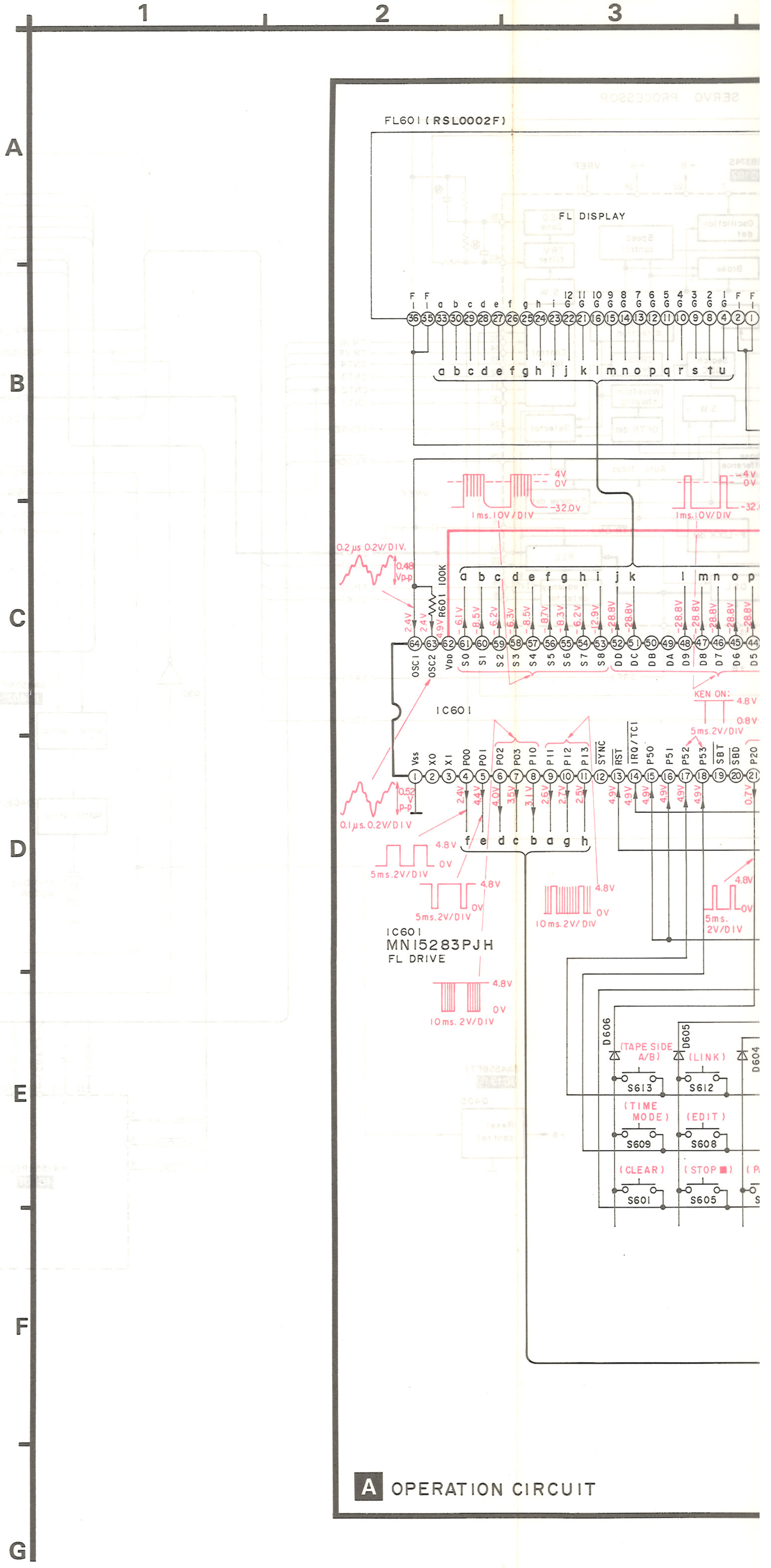
Notes:

- **S1** : Power switch in "**on**" position.
- **S2** : Voltage selector switch. For (GC) area.
- **S101** : Disc holder open/close detection switch.
- **S102** : Disc holder open/close detection switch.
- **S601** : Clear (CLEAR) switch.
- **S602** : Program (PROGRAM) switch.
- **S603** : Play (▶ PLAY) switch.
- **S604** : Pause (▮▮ PAUSE) switch.
- **S605** : Stop (■ STOP) switch.
- **S606, 611** : Skip/search (⏮-SKIP/-SEARCH ⏭) switches. S606: Reverse, S611: Forward
- **S607** : Repeat (REPEAT) switch.
- **S608** : Edit tape length (EDIT/TAPE LENGTH) switch.
- **S609** : Time mode select (TIME MODE) switch.
- **S610** : Disc holder open/close (▲ OPEN/CLOSE) switch.
- **S612** : Link (LINK) switch.
- **S613** : Tape-side select (TAPE SIDE A/B) switch
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  - * The parenthesized are the values of voltage generated during playing (Test disc 1 kHz, L+R, 0 dB), others are voltage values in stop mode.
- Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- —▭—/-▭-- : Positive voltage lines and negative voltage lines.
- ·········· : Audio signal lines.

Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.


1
2
3
A
B
C
D
E
F
G
FL601 (RSL0002F)
FL DISPLAY
IC601
IC601
MN15283PJH
FL DRIVE
R601 100K
OSC1
OSC2
Vss
X0
X1
S613
S612
S609
S608
S601
S605
(TAPE SIDE A/B)
(LINK)
(TIME MODE)
(EDIT)
(CLEAR)
(STOP ■)
D606
D605
D604
1ms.10V/DIV
5ms.2V/DIV
10ms.2V/DIV
0.2µs 0.2V/DIV
0.1µs 0.2V/DIV
A OPERATION CIRCUIT

2 1
F F
1 1
4 Pin
5M
1.Vin
2.GND
3.Vout
6 Pin

■ SCHEMATIC DIAGRAM

(Parts list on pages 40~44).

(This schematic diagram may be modified at any time with development of new technology.)

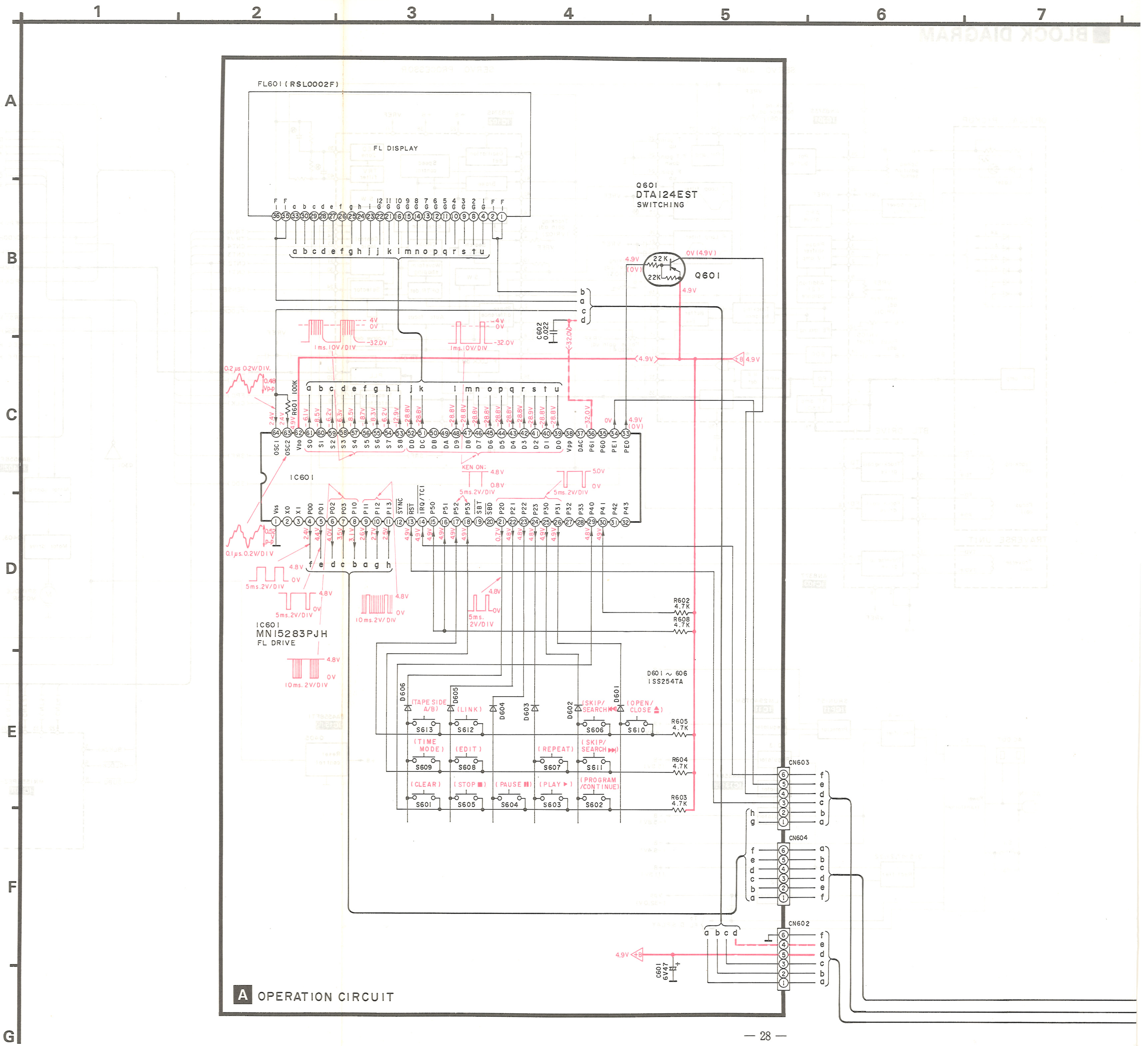
Notes:

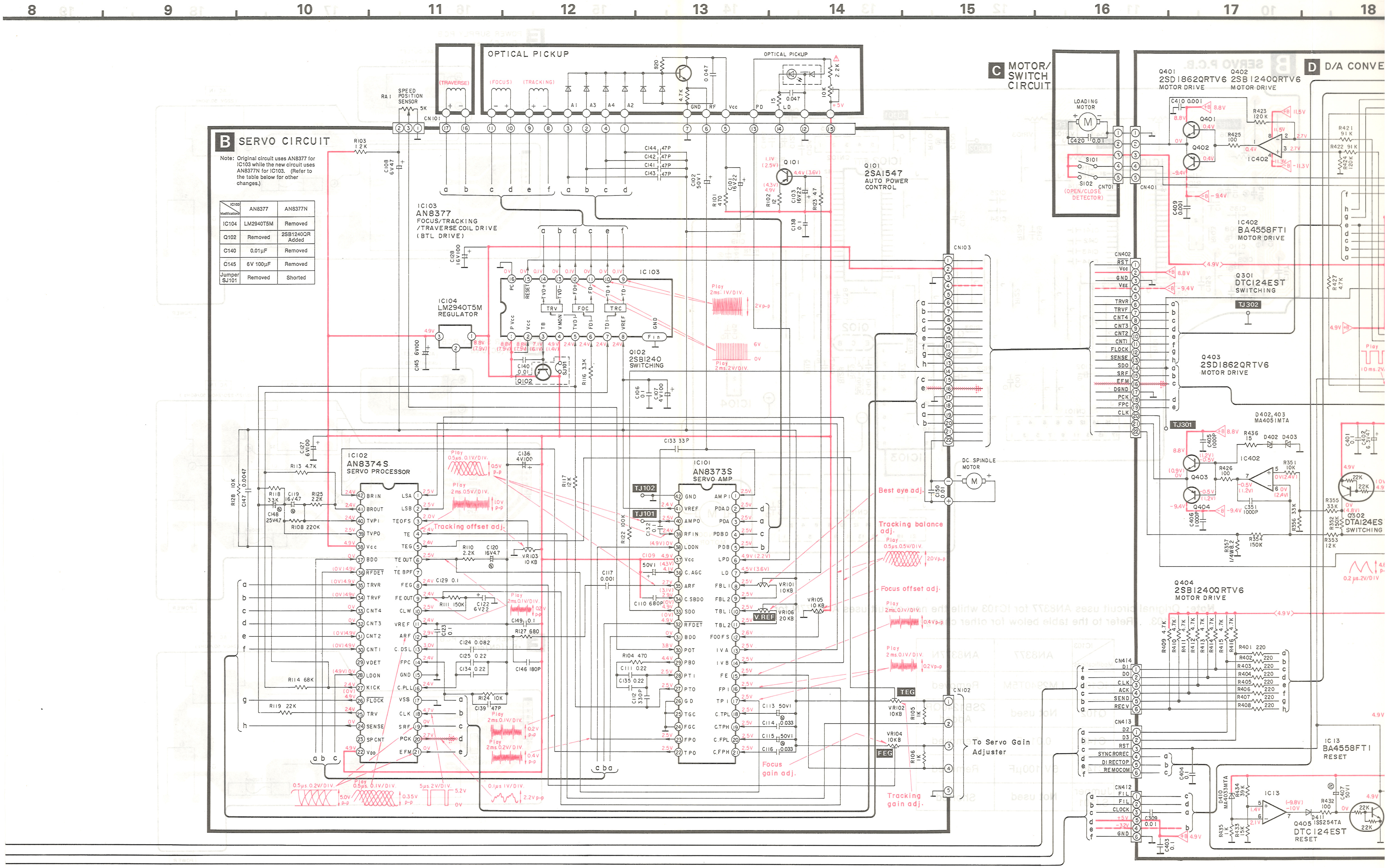
- **S1** : Power switch in "**on**" position.
- **S2** : Voltage selector switch. For (GC) area.
- **S101** : Disc holder open/close detection switch.
- **S102** : Disc holder open/close detection switch.
- **S601** : Clear (CLEAR) switch.
- **S602** : Program (PROGRAM) switch.
- **S603** : Play (▶ PLAY) switch.
- **S604** : Pause (❚❚ PAUSE) switch.
- **S605** : Stop (■ STOP) switch.
- **S606, 611** : Skip/search (|◀◀-SKIP/-SEARCH ▶▶|) switches. S606: Reverse, S611: Forward
- **S607** : Repeat (REPEAT) switch.
- **S608** : Edit tape length (EDIT/TAPE LENGTH) switch.
- **S609** : Time mode select (TIME MODE) switch.
- **S610** : Disc holder open/close (▲ OPEN/CLOSE) switch.
- **S612** : Link (LINK) switch.
- **S613** : Tape-side select (TAPE SIDE A/B) switch
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- —□— /--□--- : Positive voltage lines and negative voltage lines.
  ░░░ : Audio signal lines.

Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

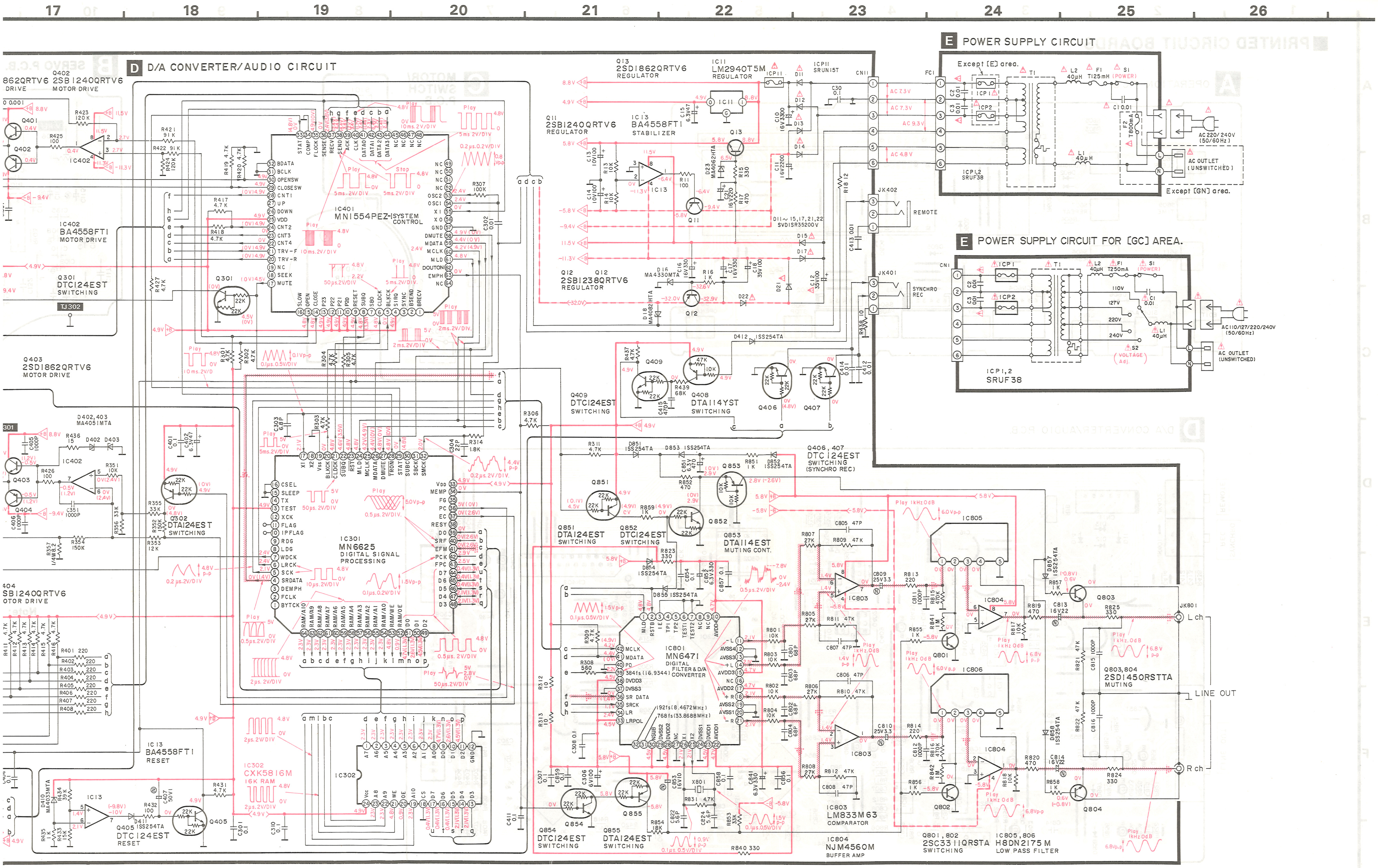

1
2
3
4
5
6
7
A
B
C
D
E
F
G
FL601 (RSL0002F)
FL DISPLAY
Q601
DTA124EST
SWITCHING
22K
22K
Q601
4.9V
(0V)
0V (4.9V)
4.9V
C602
0.022
-32.0V
1ms. 10V/DIV
4V
0V
-32.0V
0.2 μs 0.2V/DIV.
0.48Vpp
R601 100K
IC601
IC601
MN15283PJH
FL DRIVE
KEN ON:
5ms.2V/DIV
0.1 μs 0.2V/DIV
10ms.2V/DIV
4.8V
0V
R602 4.7K
R608 4.7K
D601 ~ 606
1SS254TA
D606
D605
D604
D603
D602
D601
(TAPE SIDE A/B)
(LINK)
(SKIP/SEARCH ◀◀)
(OPEN/CLOSE ▲)
S613
S612
S606
S610
(TIME MODE)
(EDIT)
(REPEAT)
(SKIP/SEARCH ▶▶)
S609
S608
S607
S611
(CLEAR)
(STOP ■)
(PAUSE ❚❚)
(PLAY ▶)
(PROGRAM /CONTINUE)
S601
S605
S604
S603
S602
R605 4.7K
R604 4.7K
R603 4.7K
CN603
CN604
CN602
C601
6V47
4.9V
A OPERATION CIRCUIT


8
9
10
11
12
13
14
15
16
17
18
OPTICAL PICKUP
(TRAVERSE)
(FOCUS)
(TRACKING)
SPEED POSITION SENSOR
RA1
5K
CN101
A1
A3
A4
A2
GND
RF
Vcc
PD
LD
C MOTOR/SWITCH CIRCUIT
LOADING MOTOR
S101
S102
(OPEN/CLOSE DETECTOR)
CN701
D D/A CONVE
Q401 2SD1862QRTV6 MOTOR DRIVE
Q402 2SB1240QRTV6 MOTOR DRIVE
IC402 BA4558FTI MOTOR DRIVE
Q301 DTC124EST SWITCHING
TJ302
Q403 2SD1862QRTV6 MOTOR DRIVE
D402,403 MA4051MTA
TJ301
Q302 DTA124ES SWITCHING
Q404 2SB1240QRTV6 MOTOR DRIVE
IC13 BA4558FTI RESET
Q405 DTC124EST RESET
Q101 2SA1547 AUTO POWER CONTROL
IC103 AN8377 FOCUS/TRACKING /TRAVERSE COIL DRIVE (BTL DRIVE)
IC104 LM2940T5M REGULATOR
Q102 2SB1240 SWITCHING
IC102 AN8374S SERVO PROCESSOR
IC101 AN8373S SERVO AMP
TJ102
TJ101
DC SPINDLE MOTOR
Best eye adj.
Tracking balance adj.
Focus offset adj.
Tracking offset adj.
Focus gain adj.
Tracking gain adj.
To Servo Gain Adjuster
TEG
FEG
V.REF
CN102
CN103
CN401
CN402
CN412
CN413
CN414

B SERVO CIRCUIT

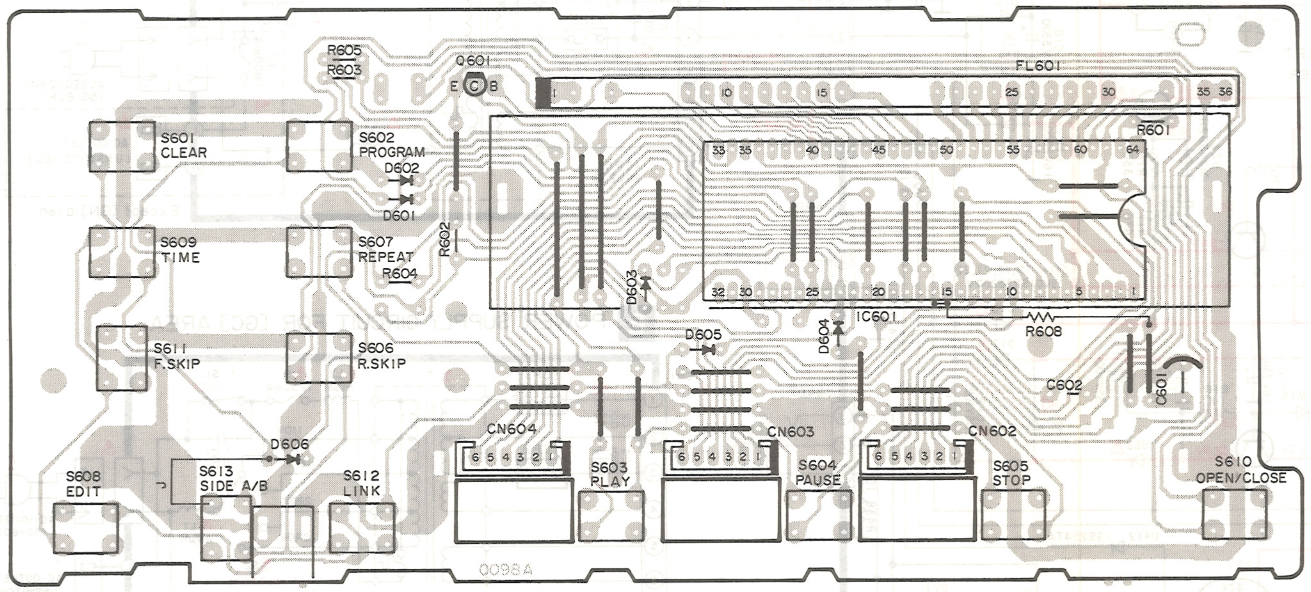
Note: Original circuit uses AN8377 for IC103 while the new circuit uses AN8377N for IC103. (Refer to the table below for other changes.)

Modifications \ IC103	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Removed	2SB1240QR Added
C140	0.01μF	Removed
C145	6V 100μF	Removed
Jumper SJ101	Removed	Shorted

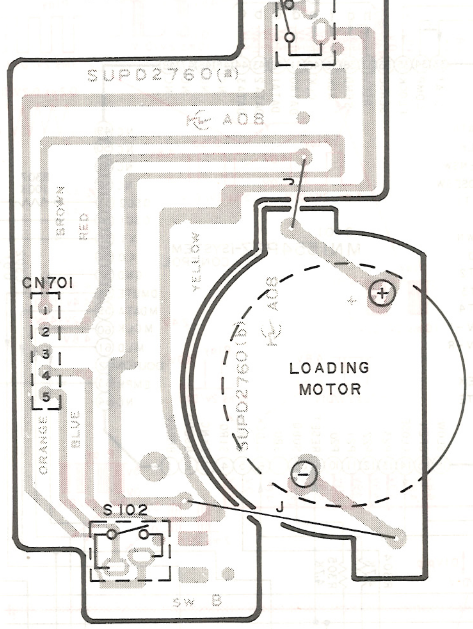

17
18
19
20
21
22
23
24
25
26
D D/A CONVERTER/AUDIO CIRCUIT
E POWER SUPPLY CIRCUIT
E POWER SUPPLY CIRCUIT FOR [GC] AREA.
Except [E] area.
Except [GN] area.
Q402 2SB1240QRTV6 MOTOR DRIVE
IC402 BA4558FTI MOTOR DRIVE
Q301 DTC124EST SWITCHING
TJ302
Q403 2SD1862QRTV6 MOTOR DRIVE
D402, 403 MA4051MTA
Q302 DTA124EST SWITCHING
Q404 2SB1240QRTV6 MOTOR DRIVE
IC13 BA4558FTI RESET
Q405 DTC124EST RESET
D411 1SS254TA
IC401 MN1554PEZ-(SYSTEM CONTROL)
IC301 MN6625 DIGITAL SIGNAL PROCESSING
IC302 CXK5816M 16K RAM
Q13 2SD1862QRTV6 REGULATOR
IC11 LM2940T5M REGULATOR
ICP11 SRUN15T
Q11 2SB1240QRTV6 REGULATOR
IC13 BA4558FTI STABILIZER
Q12 2SB1236QRTV6 REGULATOR
D11~15,17,21,22 SVDISR35200V
D16 MA4330MTA
D18 MA4082HTA
D23 MA4062HTA
JK402 REMOTE
JK401 SYNCHRO REC
Q409 DTC124EST SWITCHING
Q408 DTA114YST SWITCHING
Q406, 407 DTC124EST SWITCHING (SYNCHRO REC)
D412 1SS254TA
D851 1SS254TA
D853 1SS254TA
D852 1SS254TA
D854 1SS254TA
D855 1SS254TA
Q851 DTA124EST SWITCHING
Q852 DTC124EST SWITCHING
Q853 DTA114EST MUTING CONT.
IC801 MN6471 DIGITAL FILTER & D/A CONVERTER
Q854 DTC124EST SWITCHING
Q855 DTA124EST SWITCHING
IC803 LM833M63 COMPARATOR
IC804 NJM4560M BUFFER AMP
Q801, 802 2SC3311QRSTA SWITCHING
IC805, 806 H8DN2175M LOW PASS FILTER
Q803, 804 2SD1450RSTTA MUTING
D857 1SS254TA
D858 1SS254TA
JK801
L ch
R ch
LINE OUT
CN1
FC1
ICP1,2 SRUF38
T1
L2 40µH
F1 T125mA
S1 (POWER)
C1 0.01
F2 T800mA
L1 40µH
AC 220/240V (50/60Hz)
AC OUTLET (UNSWITCHED)
T250mA
110V
127V
220V
240V
S2 (VOLTAGE Adj.)
AC110/127/220/240V (50/60Hz)
Play
Stop
X801

PRINTED CIRCUIT BOARDS

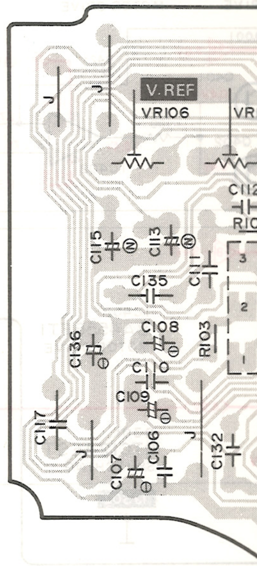
A OPERATION P.C.B.


R605
R603
Q601
FL601
R601
S601 CLEAR
S602 PROGRAM
D602
D601
S609 TIME
S607 REPEAT
R604
R602
D603
IC601
R608
S611 F.SKIP
S606 R.SKIP
D605
D604
C602
C601
CN604
CN603
CN602
D606
S608 EDIT
S613 SIDE A/B
S612 LINK
S603 PLAY
S604 PAUSE
S605 STOP
S610 OPEN/CLOSE
Q098A

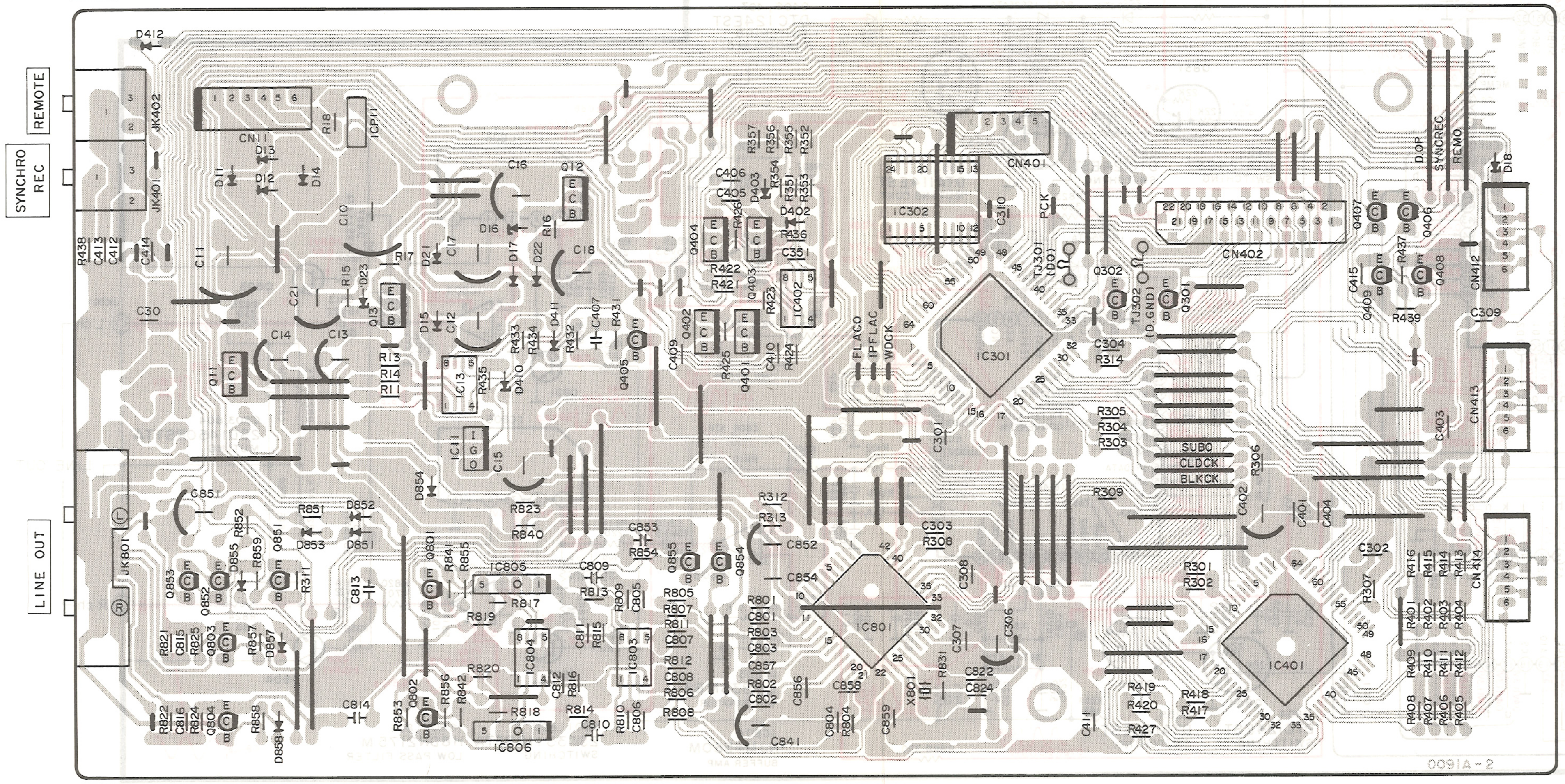
C MOTOR/ SWITCH P.C.B.


S101
SUPD2760(a)
A08
CN701
BROWN
RED
YELLOW
ORANGE
BLUE
LOADING MOTOR
S102
SW B

B SERVO P.C.B.

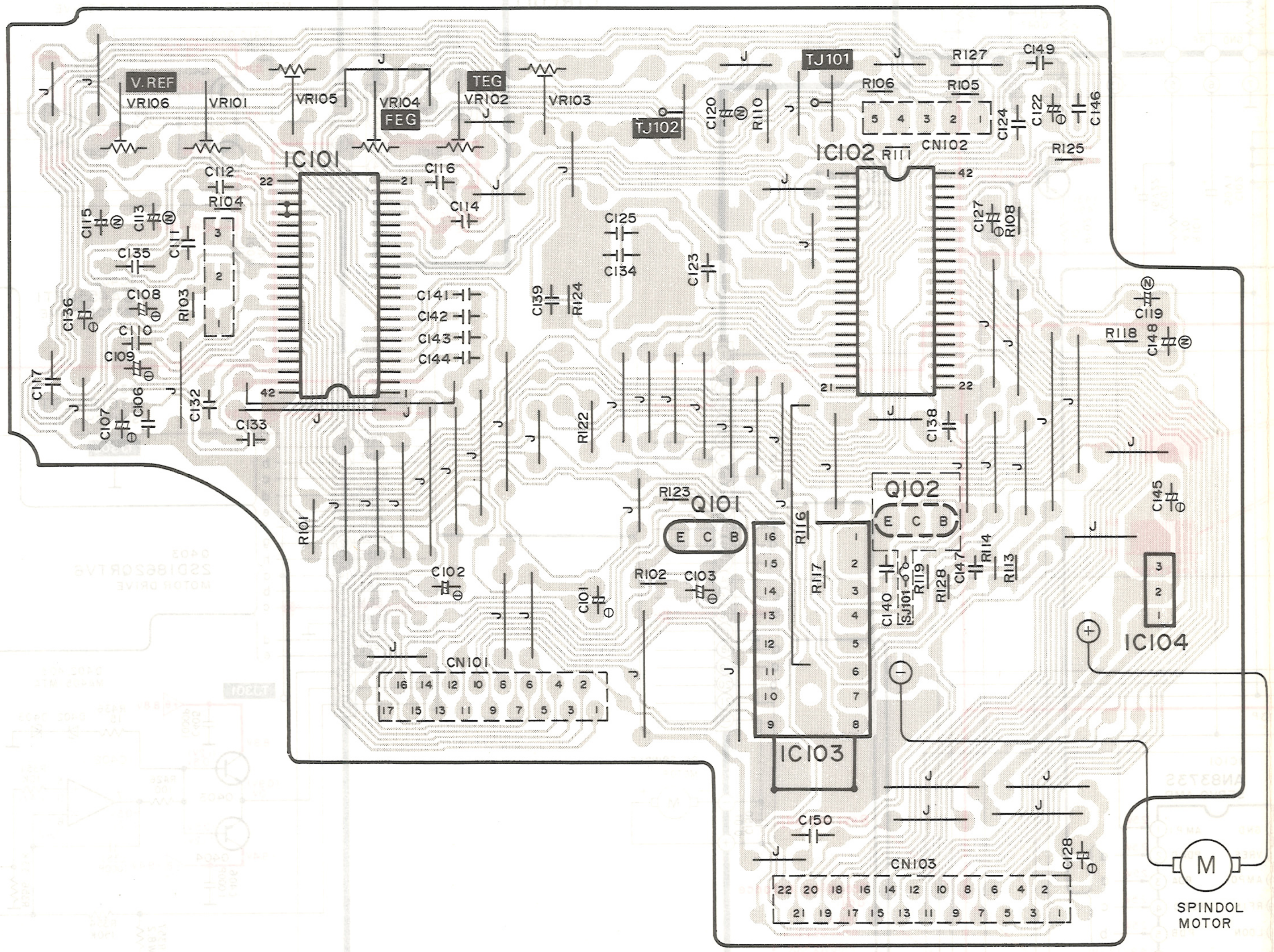

V.REF
VR106
VR101
C112
R104
C115
C113
C111
C135
C108
R103
C136
C110
C109
C117
C107
C106
C132

D D/A CONVERTER/AUDIO P.C.B.


REMOTE
SYNCHRO REC
LINE OUT
D412
JK402
JK401
CN11
R18
ICP11
D11
D13
D12
D14
C16
Q12
C10
D16
R16
C11
R17
D21
C17
D17
D22
C18
R438
C413
C412
C414
C30
C21
R15
D23
Q13
C14
C13
D15
C12
R433
R434
D411
C407
R431
R13
R14
R11
Q11
IC13
R435
D410
R432
Q405
C409
Q402
Q404
R426
Q403
R422
R421
C406
C405
D403
R357
R356
R355
R352
R354
R351
R353
D402
R436
C351
R423
IC402
R425
Q401
C410
R424
IC11
C15
D854
C851
R851
D852
D853
D851
R852
R859
Q851
Q853
Q855
Q852
R311
C813
Q801
R841
R855
IC805
C809
R813
R817
R819
R823
R840
C853
R854
Q855
Q854
R312
R313
C852
C854
R821
C815
R825
Q803
R857
D857
R809
C805
R805
R807
C811
R815
IC804
IC803
R811
C807
R820
C812
R816
R812
C808
R806
R822
C816
R824
Q804
R858
D858
C814
R853
Q802
R856
R842
R818
R814
C810
R810
C806
R808
IC806
C801
R801
R803
C803
C857
R802
C802
C856
C858
C841
C804
R804
C859
IC801
X801
R831
C822
C824
C303
R308
C308
C307
C306
FLAG0
EPFLAG
WDCK
IC302
C310
CN401
PCK
TJ301
IO1
Q302
TJ302 (D.GND)
Q301
IC301
C304
R314
C301
R305
R304
R303
SUBQ
CLDCK
BLKCK
R306
R309
C402
C401
C404
CN402
R301
R302
IC401
R419
R420
R427
R418
R417
C411
Q407
Q406
DIOP
SYNCREC
REMO
D18
CN412
C415
Q409
R437
Q408
R439
C309
CN413
C403
C302
R307
R416
R415
R414
R413
CN414
R401
R402
R403
R404
R409
R410
R411
R412
R408
R407
R406
R405
C091A-2

Note:

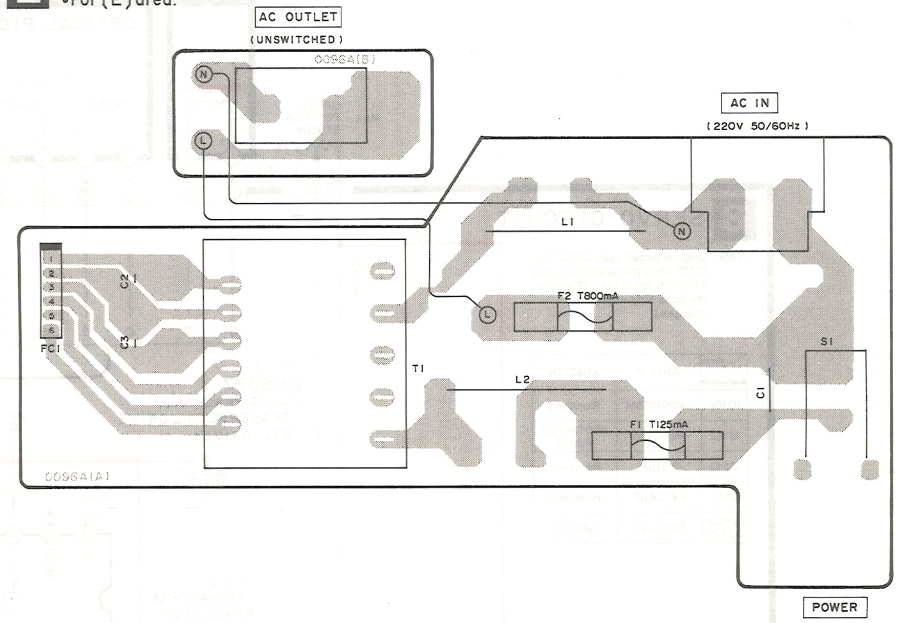
B SERVO P.C.B.


V.REF
VR106
VR101
VR105
VR104
FEG
TEG
VR102
VR103
TJ102
TJ101
IC101
IC102
IC103
IC104
R127
C149
R106
R105
CN102
R125
C116
C114
C112
R104
C115
C113
C135
C111
C108
R103
C136
C109
C117
C107
C106
C132
C133
C125
C134
C141
C142
C143
C144
C139
R124
C123
C120
R110
C124
C122
C146
C127
R108
C119
R118
C148
R122
C138
R123
Q101
E C B
Q102
E C B
R116
R117
R101
C102
R102
C103
C101
C140
SJ101
R119
R128
C147
R114
R113
C145
CN101
C150
CN103
C128
SPINDOL MOTOR
M

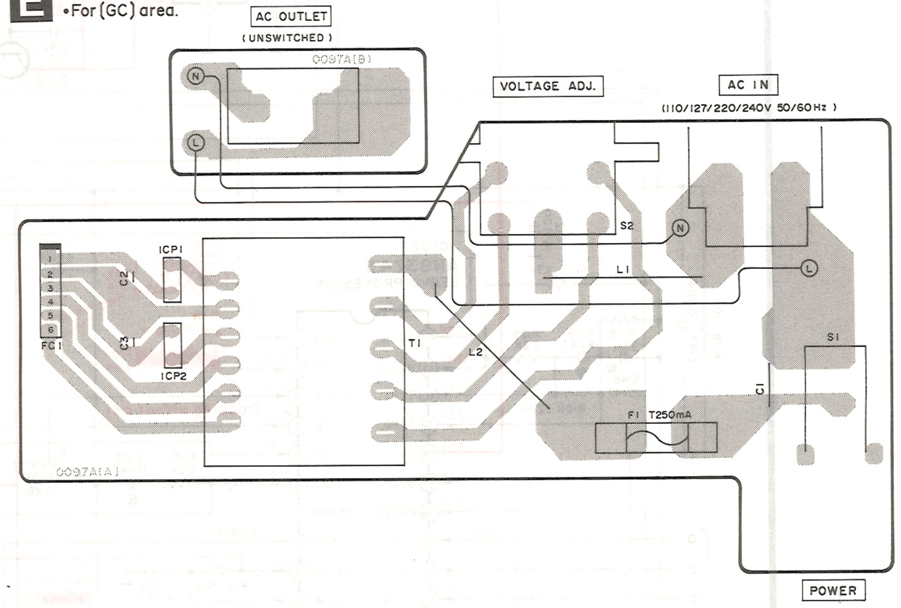
Note: Original circuit uses AN8377 for IC103 while the new circuit uses AN8377N for IC103. . (Refer to the table below for other changes.)

IC103 Modifications	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Not used	2SB1240QR Added
C140	0.01μF	Removed
C145	6V 100μF	Removed
Jumper SJ101	Not used	Shorted

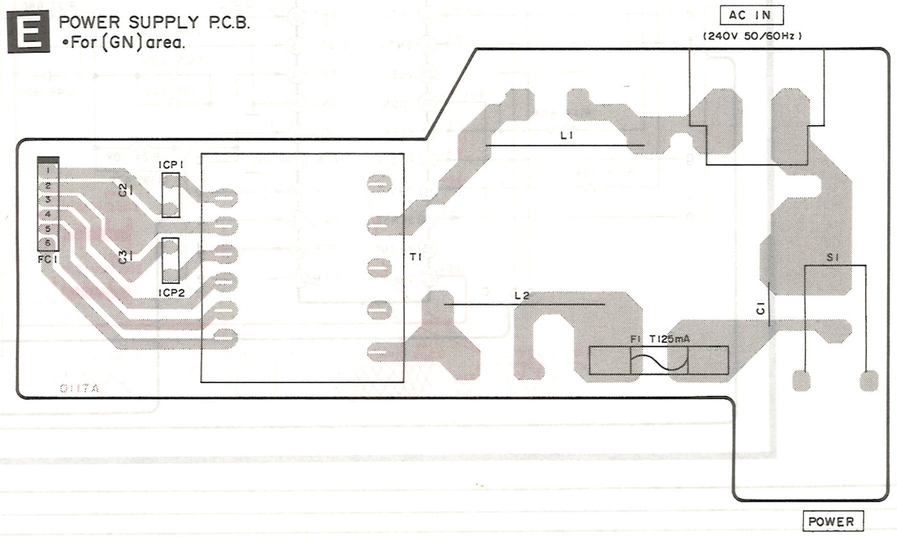
E POWER SUPPLY P.C.B.
•For (E) area.


AC OUTLET
(UNSWITCHED)
AC IN
(220V 50/60Hz)
N
L
L1
F2 T800mA
T1
L2
F1 T125mA
S1
C1
C2
C3
FC1
POWER

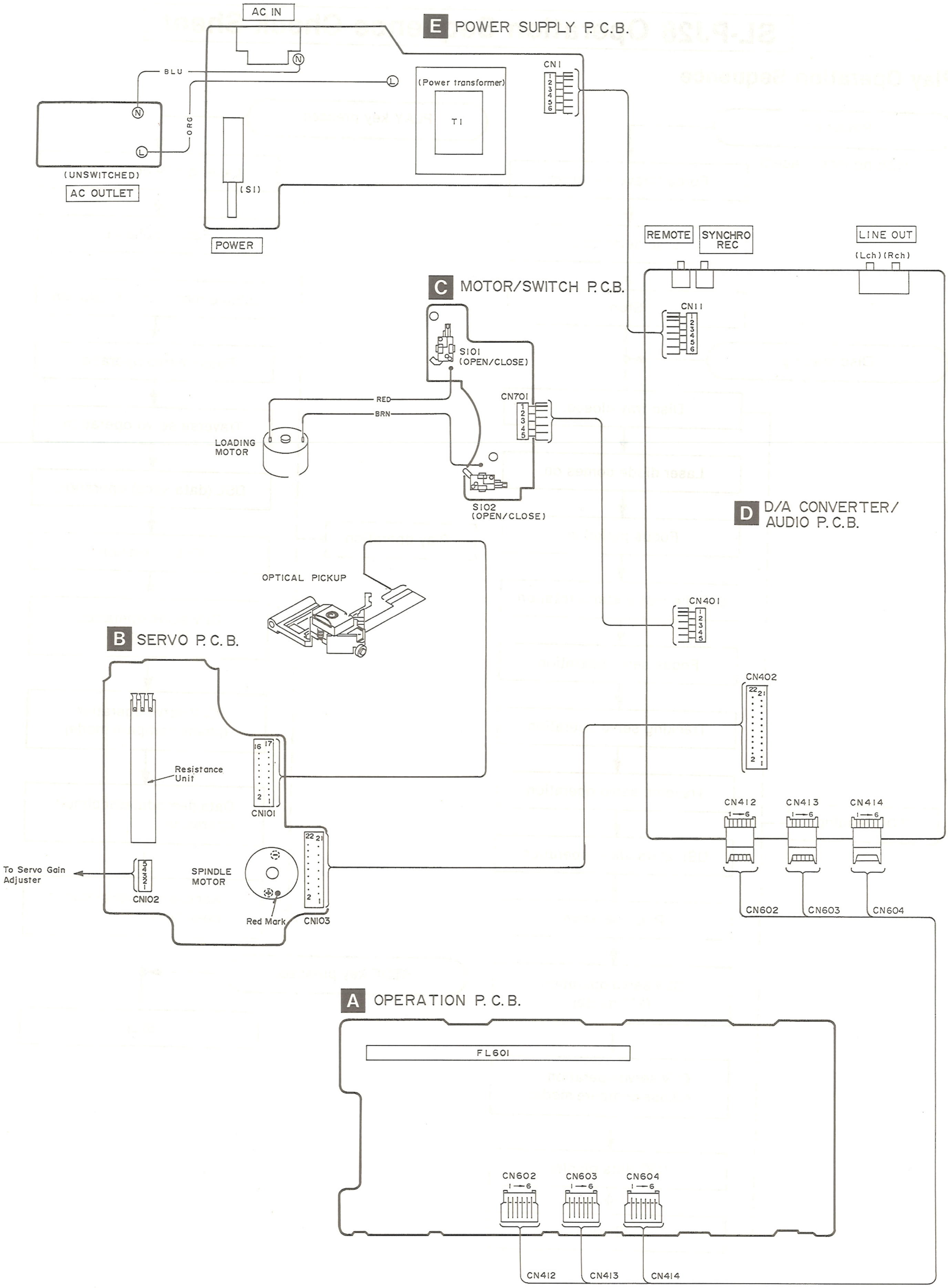
E POWER SUPPLY P.C.B.
•For (GC) area.


AC OUTLET
(UNSWITCHED)
VOLTAGE ADJ.
AC IN
(110/127/220/240V 50/60Hz)
N
L
S2
L1
ICP1
ICP2
C2
C3
FC1
T1
L2
F1 T250mA
S1
C1
POWER

E POWER SUPPLY P.C.B.
•For (GN) area.


AC IN
(240V 50/60Hz)
L1
ICP1
ICP2
C2
C3
FC1
T1
L2
F1 T125mA
S1
C1
POWER

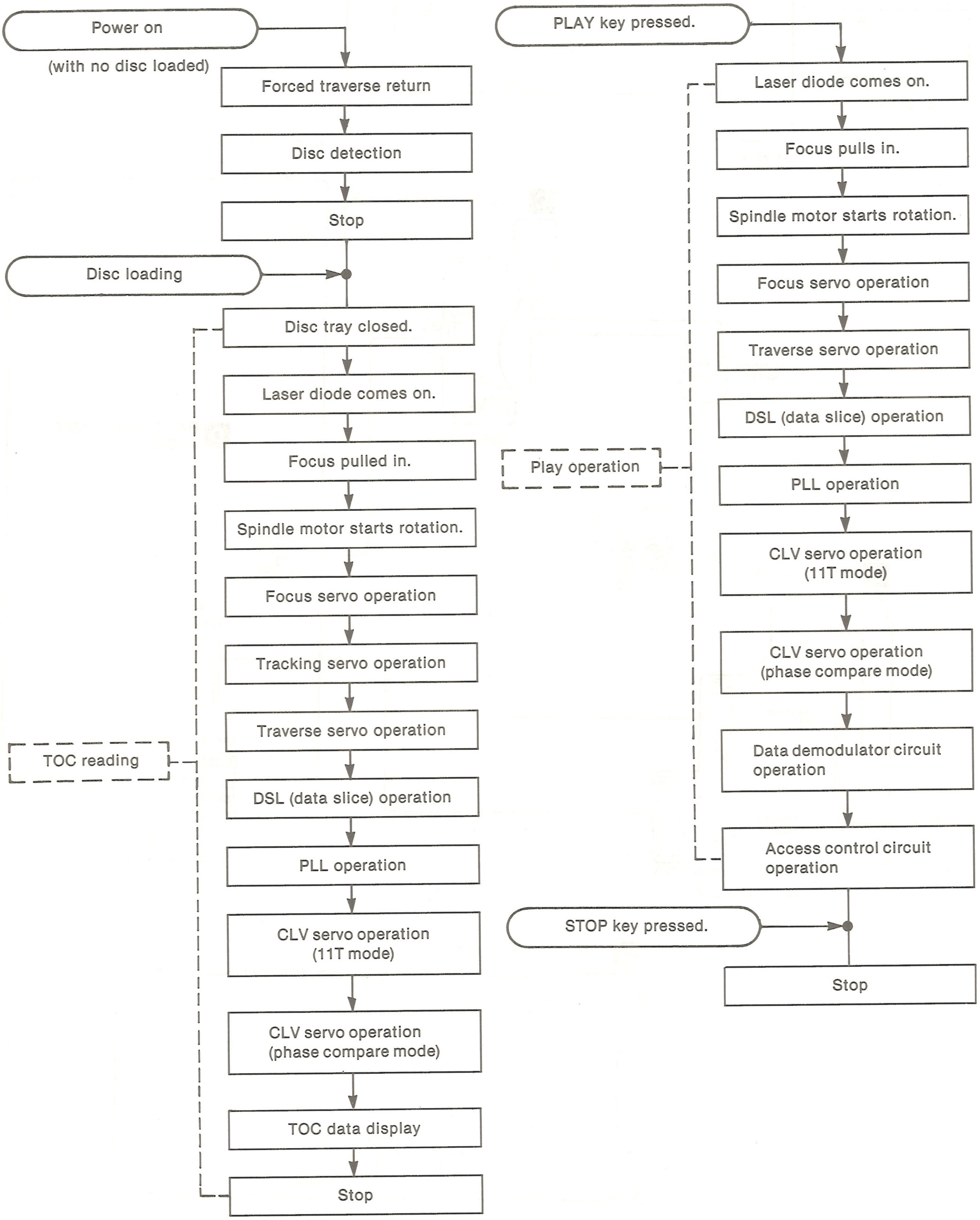
WIRING CONNECTION DIAGRAM


AC IN
E POWER SUPPLY P.C.B.
BLU
N
L
ORG
(UNSWITCHED)
AC OUTLET
(Power transformer)
T1
CN1
1
2
3
4
5
6
(S1)
POWER
REMOTE
SYNCHRO REC
LINE OUT
(Lch) (Rch)
C MOTOR/SWITCH P.C.B.
CN11
1
2
3
4
5
6
S101 (OPEN/CLOSE)
RED
BRN
CN701
1
2
3
4
5
LOADING MOTOR
S102 (OPEN/CLOSE)
D D/A CONVERTER/ AUDIO P.C.B.
OPTICAL PICKUP
CN401
1
2
3
4
5
B SERVO P.C.B.
CN402
22 21
2 1
Resistance Unit
16 17
2 1
CN101
CN412
1→6
CN413
1→6
CN414
1→6
To Servo Gain Adjuster
5
4
3
2
1
CN102
SPINDLE MOTOR
22 21
2 1
Red Mark
CN103
CN602
CN603
CN604
A OPERATION P.C.B.
FL601
CN602
1→6
CN603
1→6
CN604
1→6
CN412
CN413
CN414

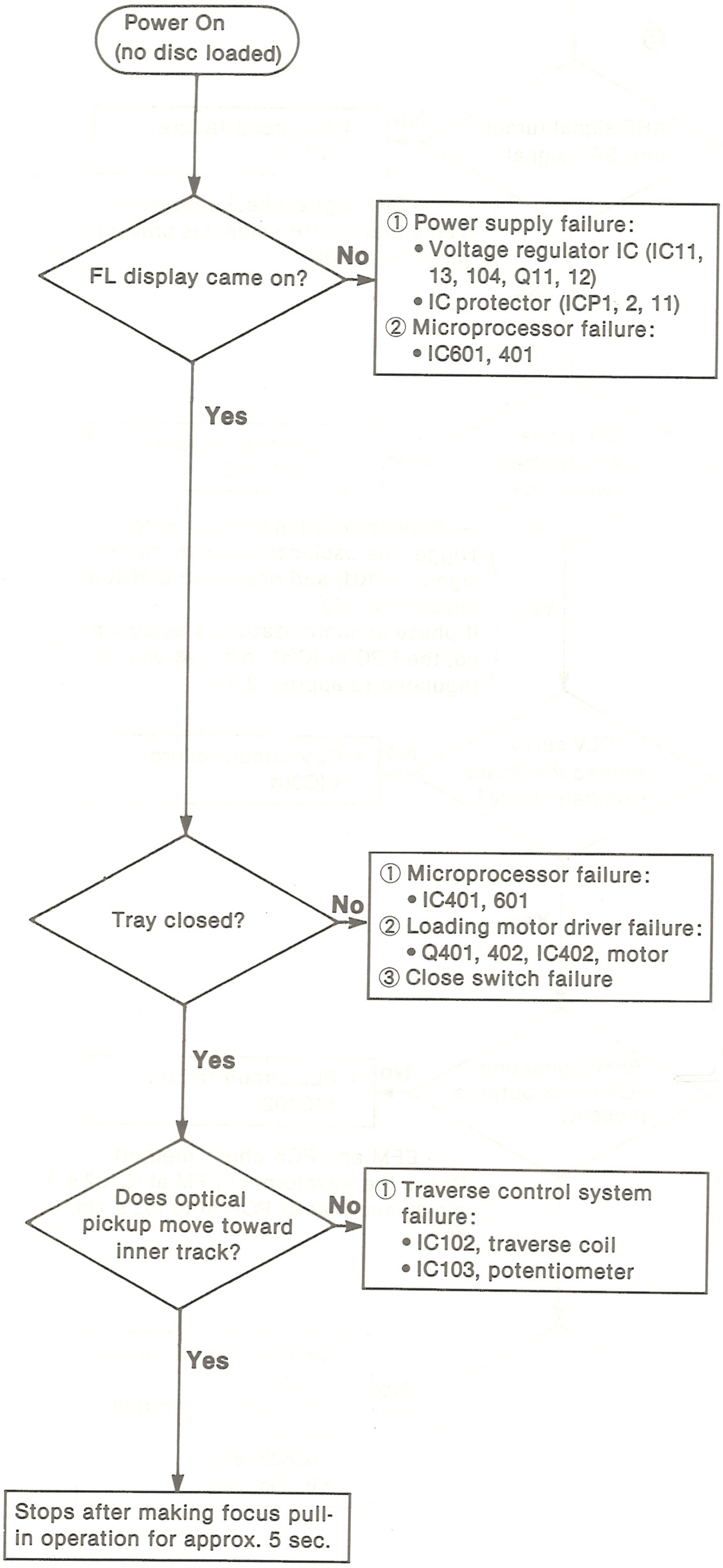
TROUBLESHOOTING GUIDE

SL-PJ26 Operation Sequence Check Sheet

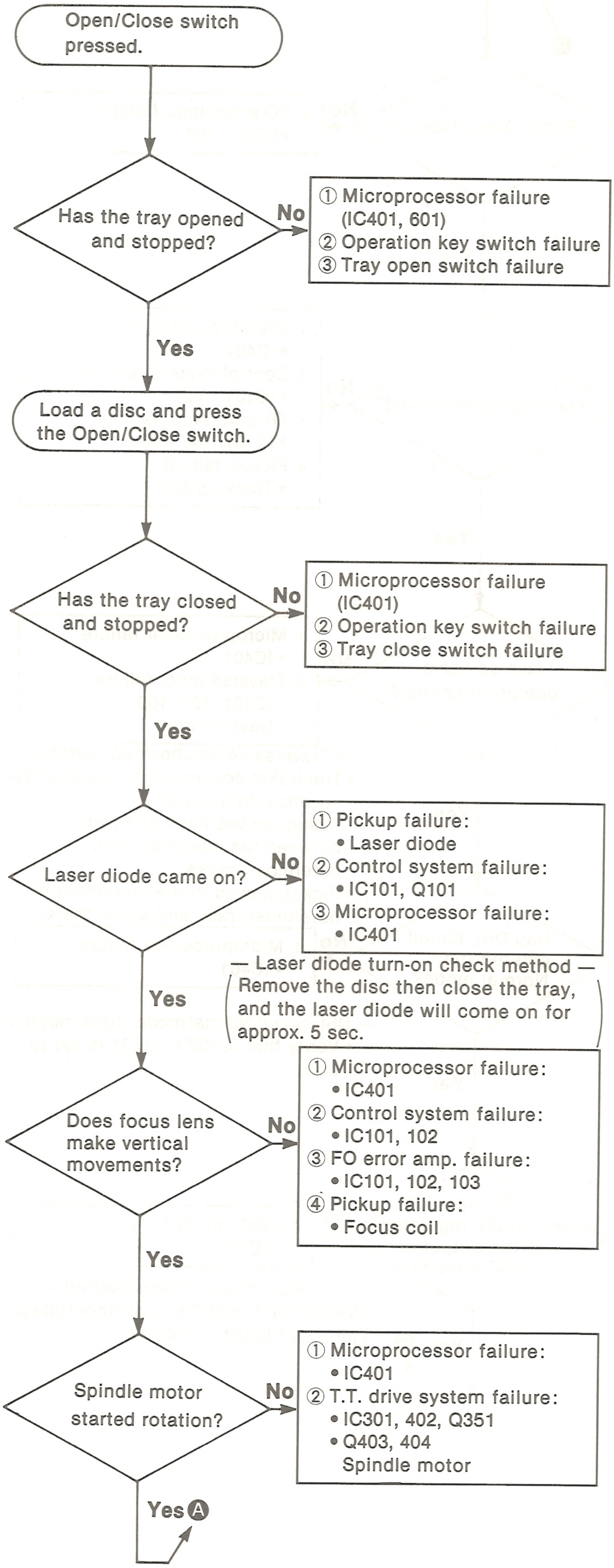
Play Operation Sequence

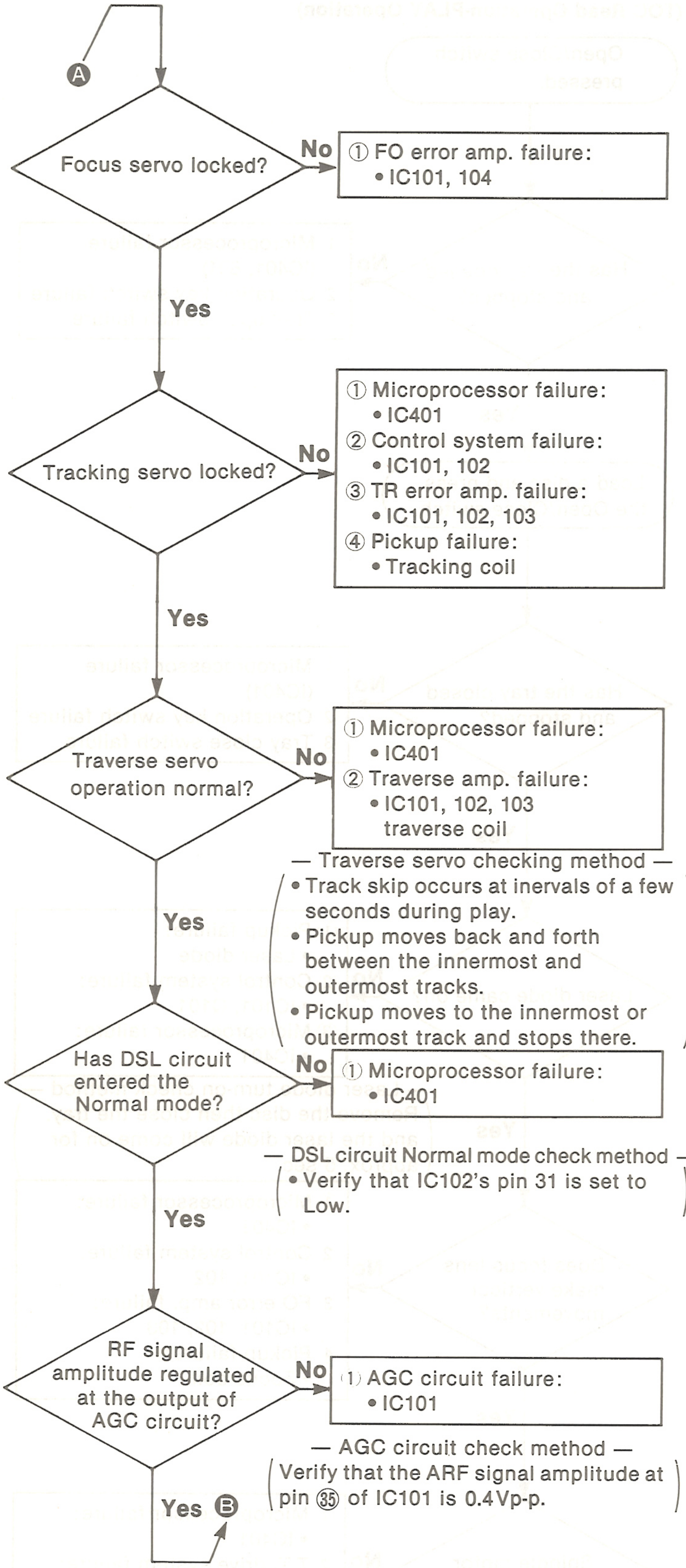

Power on
(with no disc loaded)
Forced traverse return
Disc detection
Stop
Disc loading
Disc tray closed.
Laser diode comes on.
Focus pulled in.
Spindle motor starts rotation.
Focus servo operation
Tracking servo operation
Traverse servo operation
TOC reading
DSL (data slice) operation
PLL operation
CLV servo operation (11T mode)
CLV servo operation (phase compare mode)
TOC data display
Stop
PLAY key pressed.
Laser diode comes on.
Focus pulls in.
Spindle motor starts rotation.
Focus servo operation
Traverse servo operation
DSL (data slice) operation
Play operation
PLL operation
CLV servo operation (11T mode)
CLV servo operation (phase compare mode)
Data demodulator circuit operation
Access control circuit operation
STOP key pressed.
Stop

(Operation Sequence Just After Power On)


Power On
(no disc loaded)
FL display came on?
No
① Power supply failure:
• Voltage regulator IC (IC11, 13, 104, Q11, 12)
• IC protector (ICP1, 2, 11)
② Microprocessor failure:
• IC601, 401
Yes
Tray closed?
No
① Microprocessor failure:
• IC401, 601
② Loading motor driver failure:
• Q401, 402, IC402, motor
③ Close switch failure
Yes
Does optical pickup move toward inner track?
No
① Traverse control system failure:
• IC102, traverse coil
• IC103, potentiometer
Yes
Stops after making focus pull-in operation for approx. 5 sec.

(TOC Read Operation-PLAY Operation)

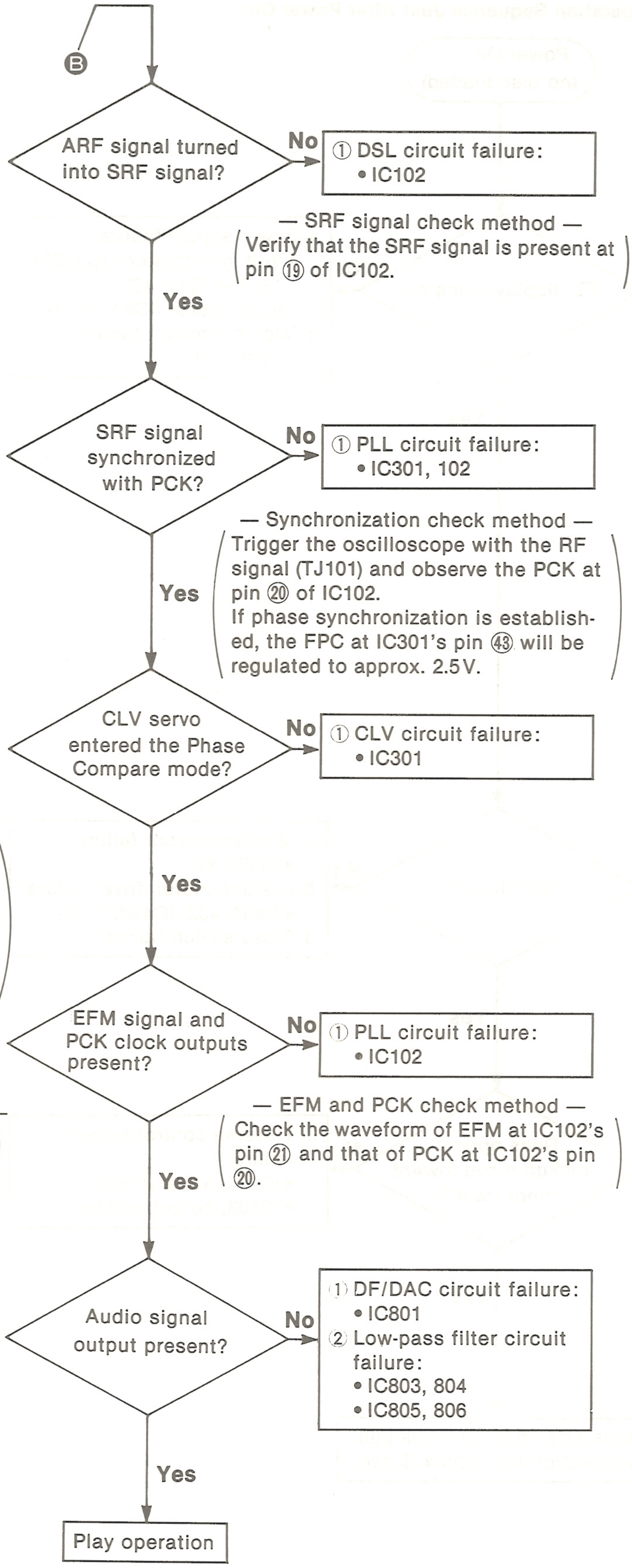

Open/Close switch pressed.
Has the tray opened and stopped?
No
① Microprocessor failure (IC401, 601)
② Operation key switch failure
③ Tray open switch failure
Yes
Load a disc and press the Open/Close switch.
Has the tray closed and stopped?
No
① Microprocessor failure (IC401)
② Operation key switch failure
③ Tray close switch failure
Yes
Laser diode came on?
No
① Pickup failure:
• Laser diode
② Control system failure:
• IC101, Q101
③ Microprocessor failure:
• IC401
— Laser diode turn-on check method —
Remove the disc then close the tray, and the laser diode will come on for approx. 5 sec.
Yes
Does focus lens make vertical movements?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ FO error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Focus coil
Yes
Spindle motor started rotation?
No
① Microprocessor failure:
• IC401
② T.T. drive system failure:
• IC301, 402, Q351
• Q403, 404
Spindle motor
Yes Ⓐ


A
Focus servo locked?
No
① FO error amp. failure:
• IC101, 104
Yes
Tracking servo locked?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ TR error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Tracking coil
Yes
Traverse servo operation normal?
No
① Microprocessor failure:
• IC401
② Traverse amp. failure:
• IC101, 102, 103 traverse coil
Yes
Has DSL circuit entered the Normal mode?
No
① Microprocessor failure:
• IC401
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
① AGC circuit failure:
• IC101
Yes B

— Traverse servo checking method —
- Track skip occurs at inervals of a few seconds during play.
- Pickup moves back and forth between the innermost and outermost tracks.
- Pickup moves to the innermost or outermost track and stops there.

— DSL circuit Normal mode check method —
- Verify that IC102's pin 31 is set to Low.

— AGC circuit check method —
Verify that the ARF signal amplitude at pin ㉟ of IC101 is 0.4Vp-p.


B
ARF signal turned into SRF signal?
No
① DSL circuit failure:
• IC102
Yes
SRF signal synchronized with PCK?
No
① PLL circuit failure:
• IC301, 102
Yes
CLV servo entered the Phase Compare mode?
No
① CLV circuit failure:
• IC301
Yes
EFM signal and PCK clock outputs present?
No
① PLL circuit failure:
• IC102
Yes
Audio signal output present?
No
① DF/DAC circuit failure:
• IC801
② Low-pass filter circuit failure:
• IC803, 804
• IC805, 806
Yes
Play operation

— SRF signal check method —
Verify that the SRF signal is present at pin ⑲ of IC102.

— Synchronization check method —
Trigger the oscilloscope with the RF signal (TJ101) and observe the PCK at pin ⑳ of IC102.
If phase synchronization is established, the FPC at IC301's pin ㊸ will be regulated to approx. 2.5V.

— EFM and PCK check method —
Check the waveform of EFM at IC102's pin ㉑ and that of PCK at IC102's pin ⑳.

RESISTORS & CAPACITORS

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)

ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Unique

ECEA	50	M	330
Type	Voltage (50V)	Characteristics	Value (33μF)

- ● Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- ● Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type	Wattage	Tolerance
ERD : Carbon ERG : Metal Oxide ERQ : Fuse Type Metal ERX : Metal Film ERD L : Carbon (chip) ERO K : Metal Film (chip) ERC : Solid ERF : Incombustible Box-Shaped ERM : Wire-Wound RRJ : Chip Resistor ERJ : Chip Resistor	10 : 1/8W 14 : 1/4W 1A : 1W S2 : 1/4W 2F : 1/4W 2A : 2W 6G : 1/10W 12 : 1/2W 25 : 1/4W 18 : 1/8W S1 : 1/2W 50 : 1/2W 3A : 3W 8G : 1/8W	J : ±5% F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic ECCD : Ceramic ECKD : Ceramic Capacitor ECQM : Polyester ECQP : Polypropylene ECG : Ceramic ECEA N : Non Polar Electrolytic QCU : Ceramic (Chip Type) ECUX : Ceramic (Chip Type) ECF : Semiconductor EECW : Liquid electrolyte double layer capacitor	0J : 6.3V 1C : 16V 1H : 50V 50 : 50V 2H : 500V 1 : 100V KC : 400V AC KC : 125V AC (UL) 1A : 10V 1E : 25V 1V : 35V 05 : 50V 2A : 100V 1J : 63V	K : ±10% M : ±20% Z : +80 −20 % J : ±5% G : ±2% F : ±1% C : ±0.25pF D : ±0.5pF

Ref. No.	Part No.	Part Name & Description	Remarks
		RESISTORS	
R11	ERDS2TJ101T	C. RESISTOR 1/4W 100	
R13, 14	ERDS2TJ103T	C. RESISTOR 1/4W 10K	
R15	ERDS2TJ331T	C. RESISTOR 1/4W 330	
R16	ERDS2TJ102T	C. RESISTOR 1/4W 1K	
R17	ERDS2TJ471T	C. RESISTOR 1/4W 470	
R18	ERDS2TJ120T	C. RESISTOR 1/4W 12	
R301~306	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R307	ERDS2TJ104T	C. RESISTOR 1/4W 100K	
R308	ERDS2TJ561T	C. RESISTOR 1/4W 560	
R309	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R311	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R312, 13	ERDS2TJ100T	C. RESISTOR 1/4W 10	
R314	ERDS2TJ182T	C. RESISTOR 1/4W 1.8K	
R351	ERDS2TJ103T	C. RESISTOR 1/4W 10K	
R352	ERDS2TJ154T	C. RESISTOR 1/4W 150K	
R353	ERDS2TJ123T	C. RESISTOR 1/4W 12K	
R354	ERDS2TJ154T	C. RESISTOR 1/4W 150K	
R355, 356	ERDS2TJ333T	C. RESISTOR 1/4W 33K	
R357	ERD25FVJ8R2T	C. RESISTOR 1/4W 8.2	
R401~408	ERDS2TJ221T	C. RESISTOR 1/4W 220	
R409~420	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R421, 422	ERDS2TJ913T	C. RESISTOR 1/4W 91K	
R423, 424	ERDS2TJ124T	C. RESISTOR 1/4W 120K	
R425, 426	ERDS2TJ101T	C. RESISTOR 1/4W 100	
R427	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R431	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R432	ERDS2TJ101T	C. RESISTOR 1/4W 100	
R433	ERDS2TJ153T	C. RESISTOR 1/4W 15K	
R434	ERDS2TJ393T	C. RESISTOR 1/4W 39K	
R435	ERDS2TJ102T	C. RESISTOR 1/4W 1K	
R436	ERDS2TJ150T	C. RESISTOR 1/4W 15	
R437	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R438	ERDS2TJ100T	C. RESISTOR 1/4W 10	
R439	ERDS2TJ683T	C. RESISTOR 1/4W 68K	
R601	ERDS2TJ104T	C. RESISTOR 1/4W 100K	
R602~605	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R608	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R801~804	ERDS2TJ103T	C. RESISTOR 1/4W 10K	
R805~808	ERDS2TJ273T	C. RESISTOR 1/4W 27K	
R809~812	ERDS2TJ473T	C. RESISTOR 1/4W 47K	
R813, 814	ERDS2TJ221T	C. RESISTOR 1/4W 220	
R815, 816	ERDS2TJ474T	C. RESISTOR 1/4W 470K	
R817, 818	ERDS2TJ103T	C. RESISTOR 1/4W 10K	
R819, 820	ERDS2TJ471T	C. RESISTOR 1/4W 470	
R821, 822	ERDS2TJ473T	C. RESISTOR 1/4W 47K	
R823~825	ERDS2TJ331T	C. RESISTOR 1/4W 330	
R831	ERDS2TJ472T	C. RESISTOR 1/4W 4.7K	
R840	ERDS2TJ331T	C. RESISTOR 1/4W 330	
R841, 842	ERDS2TJ105T	C. RESISTOR 1/4W 1M	
R851	ERDS2TJ102T	C. RESISTOR 1/4W 1K	

Ref. No.	Part No.	Part Name & Description	Remarks
R852	ERDS2TJ471T	C. RESISTOR 1/4W 470	
R853	ERDS2TJ333T	C. RESISTOR 1/4W 33K	
R854	ERDS2TJ183T	C. RESISTOR 1/4W 18K	
R855~859	ERDS2TJ102T	C. RESISTOR 1/4W 1K	
		CAPACITORS	
C1	ECKDKC103PF2	. CAPACITOR 400V 0.01U	⚠
C2, C3	ECKM1H103ZFX	. CAPACITOR 50V 0.01U	⚠
C10	ECEA1CU332E	E. CAPACITOR 16V 3300U	
C11	ECEA1CU222E	E. CAPACITOR 16V 2200U	
C12	ECEA1VU101B	E. CAPACITOR 35V 100U	⚠
C13, 14	ECEA1AK101B	E. CAPACITOR 10V 100U	
C15	ECEA0JK470B	E. CAPACITOR 6.3V 47U	
C16, 17	ECEA1CU331B	E. CAPACITOR 16V 330U	
C18	ECEA1VU101B	E. CAPACITOR 35V 100U	
C21	ECEA1CU221B	E. CAPACITOR 16V 220U	
C30	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C301	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C302	ECBT1C103NS5	. CAPACITOR 16V 0.01U	
C303	ECBT1H6R8K5	. CAPACITOR 50V 6.8P	
C304	ECBT1H220J5	. CAPACITOR 50V 22P	
C306	ECEA0JK101B	E. CAPACITOR 6.3V 100U	
C307, 308	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C309	ECBT1C103NS5	. CAPACITOR 16V 0.01U	
C310	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C351	ECBT1H102KB5	. CAPACITOR 50V 0.001U	
C401	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C402	ECEA0JK470B	E. CAPACITOR 6.3V 47U	
C403, 404	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C405, 406	ECBT1H102KB5	. CAPACITOR 50V 0.001U	
C407	ECEA1HKN010B	E. CAPACITOR 50V 1U	
C409, 10	ECBT1H102KB5	. CAPACITOR 50V 0.001U	
C411	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C412~414	ECBT1C103NS5	. CAPACITOR 16V 0.01U	
C415	ECBT1H471KB5	. CAPACITOR 50V 470P	
C601	ECEA0JK470B	E. CAPACITOR 6.3V 47U	
C602	ECBT1E223ZF5	. CAPACITOR 25V 0.022U	
C801~804	ECBT1H680J5	. CAPACITOR 50V 68P	
C805~808	ECBT1H470J5	. CAPACITOR 50V 47P	
C809, 810	ECEA1EN3R3SB	E. CAPACITOR 25V 3.3U	
C811, 812	ECBT1H102KB5	. CAPACITOR 50V 0.001U	
C813, 814	ECEA1CN220SB	E. CAPACITOR 16V 22U	
C815, 816	ECBT1H102KB5	. CAPACITOR 50V 0.001U	
C822	ECBT1H5R6K5	. CAPACITOR 50V 5.6P	
C824	ECBT1H5R6K5	. CAPACITOR 50V 5.6P	
C841	ECEA0JU331B	E. CAPACITOR 6.3V 330U	
C851	ECEA0JU471B	E. CAPACITOR 6.3V 470U	
C852	ECEA0JU331B	E. CAPACITOR 6.3V 330U	
C853	ECEA1CKN100B	E. CAPACITOR 16V 10U	
C854	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	
C856~859	ECFR1E104ZF5	S. CAPACITOR 25V 0.1U	

Ref. No.	Part No.	Part Name & Description	Remarks
		RESISTORS <SERVO P.C.B>	
R101	ERDS2TJ471	C. RESISTOR 1/4 470	
R102	ERJ6GEYJ120V	C. RESISTOR 1/10 12	
R103	ERJ6GEYJ122	C. RESISTOR 1/10 1.2K	
R104	ERJ6GEYJ471	C. RESISTOR 1/10 470	
R105	RRJ6GCJ102TE	C. RESISTOR 1/6 1K	
R106	RRJ6GCJ102TE	C. RESISTOR 1/6 1K	
R108	ERJ6GEYJ224V	C. RESISTOR 1/10 220K	
R110	ERDS2TJ222	C. RESISTOR 1/4 2.2K	
R111	ERJ6GEYJ154V	C. RESISTOR 1/10 150K	
R113	ERJ6GEYJ472V	C. RESISTOR 1/10 4.7K	
R114	ERJ6GEYJ683V	C. RESISTOR 1/10 68K	
R116	ERJ6GEYJ332V	C. RESISTOR 1/10 3.3K	
R117	ERJ6GEYJ123	C. RESISTOR 1/10 12K	
R118	ERJ6GEYJ333V	C. RESISTOR 1/10 33K	
R119	RRJ6GCJ223TE	C. RESISTOR 1/6 22K	
R122	ERDS2TJ104	C. RESISTOR 1/4 100K	
R123	ERJ6GEYJ470V	C. RESISTOR 1/10 47	
R124	RRJ6GCJ103TE	C. RESISTOR 1/6 10K	
R125	RRJ6GCJ222TE	C. RESISTOR 1/6 2.2K	
R127	ERDS2TJ681	C. RESISTOR 1/4 680	
R128	RRJ6GCJ103TE	C. RESISTOR 1/6 10K	
		CAPACITORS <SERVO P.C.B>	
C101	ECEA1CKS220I	E. CAPACITOR 16V 22U	
C102	ECEA1HKS010I	E. CAPACITOR 50V 1U	
C103	ECEA1CKS220I	E. CAPACITOR 16V 22U	
C106	RCUV1E104ZF	E. CAPACITOR 25V 0.1U	
C107	ECEA0GKS101I	E. CAPACITOR 4V 100U	
C108	ECEA0JKS470I	E. CAPACITOR 6.3V 47U	
C109	ECEA1HKS010I	E. CAPACITOR 50V 1U	
C110	RCUV1H681KB	E. CAPACITOR 50V 680P	
C111	ECUV1C224KR	E. CAPACITOR 16V 0.22U	
C112	RCUV1H331KB	E. CAPACITOR 50V 330P	
C113	ECEA1HSN010I	E. CAPACITOR 50V 1U	
C114	RCUV1E333KB	E. CAPACITOR 25V 0.033U	
C115	ECEA1HSN010I	E. CAPACITOR 50V 1U	
C116	RCUV1E333KB	E. CAPACITOR 25V 0.033U	
C117	ECBT1H102KB5	E. CAPACITOR 50V 0.001U	
C119	ECEA1CKN4R7I	E. CAPACITOR 16V 4.7U	
C120	ECEA1CKN4R7I	E. CAPACITOR 16V 4.7U	
C122	ECEA0JKS220I	E. CAPACITOR 6.3V 22U	
C123	RCUV1E104ZF	E. CAPACITOR 25V 0.1U	
C124	ECUV1E823KB	E. CAPACITOR 25V 0.082U	
C125	ECUV1C224KR	E. CAPACITOR 16V 0.22U	
C127	ECEA0JKF101I	E. CAPACITOR 6.3V 100U	
C128	ECEA1CKA101I	E. CAPACITOR 16V 100U	
C132	ECUV1E104KB	E. CAPACITOR 25V 0.1U	
C133	RCUV1H330KC	E. CAPACITOR 50V 33P	

Ref. No.	Part No.	Part Name & Description	Remarks
C134	ECUV1C224KR	E. CAPACITOR 16V 0.22U	
C135	ECUV1C224KR	E. CAPACITOR 16V 0.22U	
C136	ECEA0GKS101I	E. CAPACITOR 4V 100U	
C138	RCUV1E104ZF	E. CAPACITOR 25V 0.1U	
C139	RCUV1H470KC	E. CAPACITOR 50V 47P	
C140	RCUV1E103KB	E. CAPACITOR 25V 0.01U	
C141	RCUV1H470KC	E. CAPACITOR 50V 47P	
C142	RCUV1H470KC	E. CAPACITOR 50V 47P	
C143	RCUV1H470KC	E. CAPACITOR 50V 47P	
C144	RCUV1H470KC	E. CAPACITOR 50V 47P	
C145	ECEA0JKF101I	E. CAPACITOR 6.3V 100U	
C146	RCUV1H181KC	E. CAPACITOR 50V 180P	
C147	RCUV1H472KB	E. CAPACITOR 50V0.0047U	
C148	ECEA1ESN4R7I	E. CAPACITOR 25V 4.7U	
C149	RCUV1E104ZF	E. CAPACITOR 25V 0.1U	
C150	RCUV1E103KB	E. CAPACITOR 25V 0.01U	
C420	ECKW1H103KB5	E. CAPACITOR 50V 0.1U	

REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUITS	
IC11	LM2940T5M	IC, REGULATOR	
IC13	BA4558FT1	IC, RESET	
IC301	MN6625	IC, DGITAL SIGNAL PROCESSING	
IC302	CXK5816M	IC, 16K RAM	
IC401	MN1554PEZ-1	IC, SYSTEM CONTROL	
IC402	BA4558FTI	IC, MOTOR DRIVE	
IC601	MN15283PJH	IC, FL DRIVE	
IC801	MN6471	IC, D. F. & D/A CONVERTER	
IC803	LM833M63	IC, COMPARATOR	
IC804	NJM4560M	IC, BUFFER AMP	
IC805, 06	H8DN2175M	IC, L. P. F.	
ICP1, 2	SRUF38	IC, PROTECTOR	<GN, GC> ⚠
ICP11	SRUN15T	IC, PROTECTOR	⚠
		TRANSISTORS	
Q11	2SB1240QRTV6	TRANSISTOR	
Q12	2SB1238QSTV6	TRANSISTOR	
Q13	2SD1862QRTV6	TRANSISTOR	
Q301	DTC124EST	TRANSISTOR	
Q302	DTA124EST	TRANSISTOR	
Q401	2SD1862QRTV6	TRANSISTOR	
Q402	2SB1240QRTV6	TRANSISTOR	
Q403	2SD1862QRTV6	TRANSISTOR	
Q404	2SB1240QRTV6	TRANSISTOR	
Q405~407	DTC124EST	TRANSISTOR	
Q408	DTA114YST	TRANSISTOR	
Q409	DTC124EST	TRANSISTOR	
Q601	DTA124EST	TRANSISTOR	
Q801, 802	2SC3311QRSTA	TRANSISTOR	
Q803, 804	2SD1450RSTTA	TRANSISTOR	
Q851	DTA124EST	TRANSISTOR	
Q852	DTC124EST	TRANSISTOR	
Q853	DTA114EST	TRANSISTOR	
Q854	DTC124EST	TRANSISTOR	
Q855	DTA124EST	TRANSISTOR	
		DIODES	
D11-15	SVD1SR35200V	DIODE	⚠
D16	MA4330MTA	DIODE	
D17	SVD1SR35200V	DIODE	⚠
D18	MA4082HTA	DIODE	
D21, 22	SVD1SR35200V	DIODE	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D23	MA4062HTA	DIODE	
D402, 03	MA4051MTA	DIODE	
D410	MA4033MTA	DIODE	
D411, 12	1SS254TA	DIODE	
D601~606	1SS254TA	DIODE	
D851~855	1SS254TA	DIODE	
D857, 858	1SS254TA	DIODE	
		COILS	
L1, L2	SLQX400-D	COIL	⚠
		TRANSFORMERS	
T1	SLTD5K097SE	POWER TRANSFORMER	<E> ⚠
T1	SLTD5K098SG	POWER TRANSFORMER	<GN> ⚠
T1	SLTD5K099SX	POWER TRANSFORMER	<GC> ⚠
		OSCILLATORS	
X801	SVQ49U338S	OSCILLATOR	
		DISPLAY TUBE	
FL601	RSL0002F	DISPLAY TUBE	
		FUSES	
F1	XBA2C012TB0	125V, T125mA	<E, GN> ⚠
F1	XBA2C025TB0	125V, T250mA	<GC> ⚠
F2	XBA2C08TB0	125V, T800mA	<E> ⚠
		SWITCHES	
S1	ESB8249V	SW, POWER	⚠
S2	SSR187-1	SW, VOLTAGE SELECTOR	<GC> ⚠
S101	SSPD17	SW, LODING DET.	
S102	SSPD18	SW, LODING DET.	
S601	EVQQB005R	SW, CLEAR	
S602	EVQQB005R	SW, PROGRAM	
S603	EVQQB005R	SW, PLAY	
S604	EVQQB005R	SW, PAUSE	
S605	EVQQB005R	SW, STOP	
S606	EVQQB005R	SW, R. SKIP/SEARCH	
S607	EVQQB005R	SW, REPEAT	
S608	EVQQB005R	SW, EDIT/TAPE LENGTH	
S609	EVQQB005R	SW, TIME MODE	

Ref. No.	Part No.	Part Name & Description	Remarks
S610	EVQQB005R	SW,OPEN/CLOSE	
S611	EVQQB005R	SW,F.SKIP/SEARCH	
S612	EVQQB005R	SW,LINK	
S613	EVQQB005R	SW,TAPE SIDE A/B	
		CONNECTOR AND SOCKET	
CN11	SJT30643-VM	CONNECTOR	
CN401	SJT30543-VM	CONNECTOR	
CN402	SJSD2221M	SOCKET	
CN412~414	SJS50680WLM	SOCKET	
CN602~604	SJT30647WL	CONNECTOR	
		CABLE	
FC1	SIKD552062	FLAT CABLE	
		JACKS	
JK401	SJJ130-1M	SYNCHRO	
JK402	SJJ130-2M	REMOTE	
JK801	SJFD4M	LINE OUT	

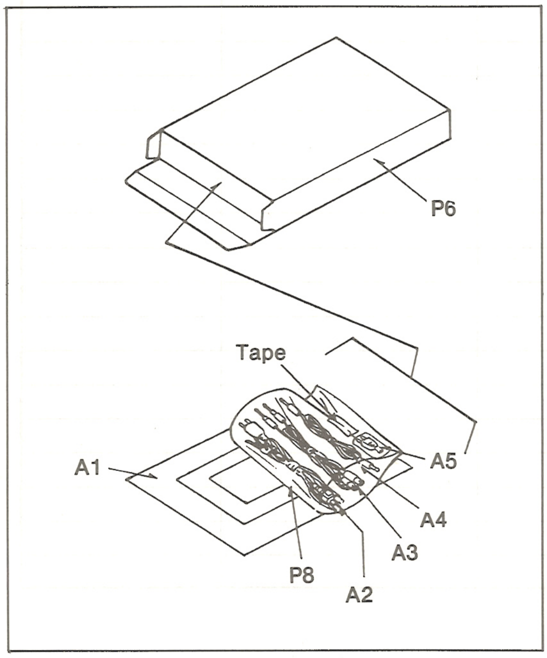
Ref. No.	Part No.	Part Name & Description	Remarks
		<SERVO P.C.B>	
		INTEGRATED CIRCUITS	
IC101	AN8373S	IC,SERVO AMP	
IC102	AN8374S	IC,SERVO PROCESSOR	
IC103	AN8377	IC,B.T.L DRIVE	
IC104	LM2940T5M	IC,RESET	
		TRANSISTORS <SERVO P.C.B>	
Q101	2SA1547QSTV2	TRANSISTOR	
		<SERVO P.C.B>	
		VARIABLE RESISTORS	
VR101	EVND3AA00B14	V.R,BEST EYE ADJ.	
VR102	EVND3AA00B14	V.R,TRACKING GAIN ADJ.	
VR103	EVND3AA00B14	V.R,TRACKING OFFSET ADJ.	
VR104	EVND3AA00B14	V.R,FOCUS GAIN ADJ.	
VR105	EVND3AA00B14	V.R,FOCUS OFFSET ADJ.	
VR106	EVND3AA00B24	V.R,TRACKING BALANCE ADJ.	
		<SERVO P.C.B>	
		MAGNET RESISTOR ELEMENTS	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

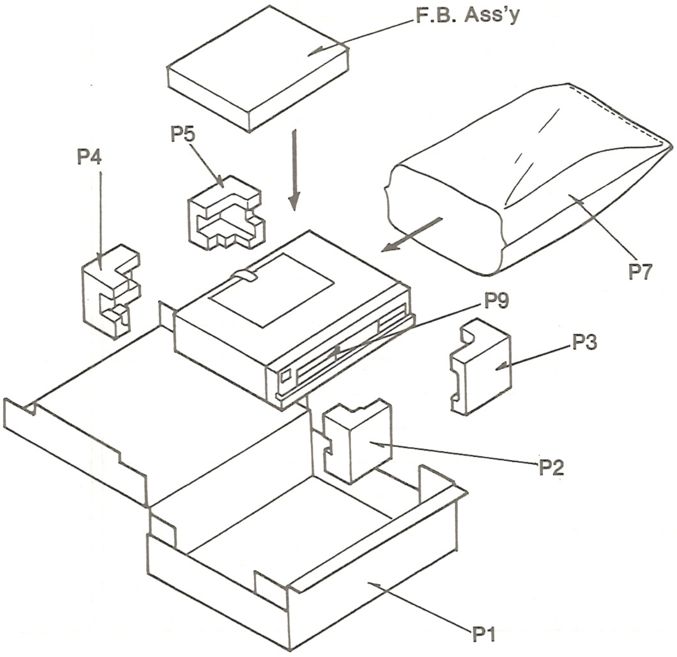
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0015-K	CABINET	
2	SJS9236	AC INLET	<E, GC> ⚠
2	SJSD16	AC INLET	<GN> ⚠
3	SJS9232B	AC OUTLET	<GC> ⚠
3	SJS9333B	AC OUTLET	<E> ⚠
4	SJT390	FUSE HOLDER	
5	RGK0057	ORNAMENT	
6	RGR0011A-A	REAR PANEL	<E>
6	RGR0011B-B	REAR PANEL	<GC>
6	RGR0011C-C	REAR PANEL	<GN>
7	RMK0054	CHASSIS ASS'Y	
7-1	RKA0011	FOOT	
8	SUSD144	SPRING	
9	RMR0084	ROD	
10	SBC666-1	BUTTON, POWER	
11	SHE185-2	BRACKET	
12	SJS9232A	AC OUTLET COVER	<GC>
12	SJS9333A	AC OUTLET COVER	<E>
13	RGP0054	FRONT PANEL ASS'Y	
13-1	RKW0013	ORNAMENT	
14	RGU0057	BUTTON, MAIN	
15	RGU0062	BUTTON, SKIP	
16	RGU0063	BUTTON, EDIT	
17	SUWD139	FL HOLDER	

Ref. No.	Part No.	Part Name & Description	Remarks
N1	RHD30003	SCREW	
N2	XTBS3+8JFZ1	SCREW	
N3	XTB3+16JFZ	SCREW	
N4	XTB3+8F	SCREW	
N5	XTB3+8JFZ	SCREW	
		ACCESSORIES	
A1	RQT0202-Z	INSTRUCTION MANUAL	<E>
A1	RQT0107G	INSTRUCTION MANUAL	<GC>
A1	RQT0107L	INSTRUCTION MANUAL	<GN>
A2	RJA0004	POWER CORD	<GC> ⚠
A2	SFDAC05E03	POWER CORD	<E> ⚠
A2	SJA173	POWER CORD	<GN> ⚠
A3	SJP2249-3	OUTPUT CORD	
A4	SJP2257T	SYNCHRO REC CORD	
A5	SJP9215	AC PLUG ADAPTOR	<GC> ⚠
		PACKING MATERIAL	
P1	RPG0112	CARTON BOX	
P2	RPN0101A	PAD	
P3	RPN0101B	PAD	
P4	RPN0101C	PAD	
P5	RPN0101D	PAD	
P6	SPSD152	ACCESSORY BOX	
P7	XZB60X60A01	PROTECTION BAG (UNIT)	
P8	XZB23X20C03	PROTECTION BAG (CORD)	
P9	RPH0026	PROTECTION SHEET	

PACKING

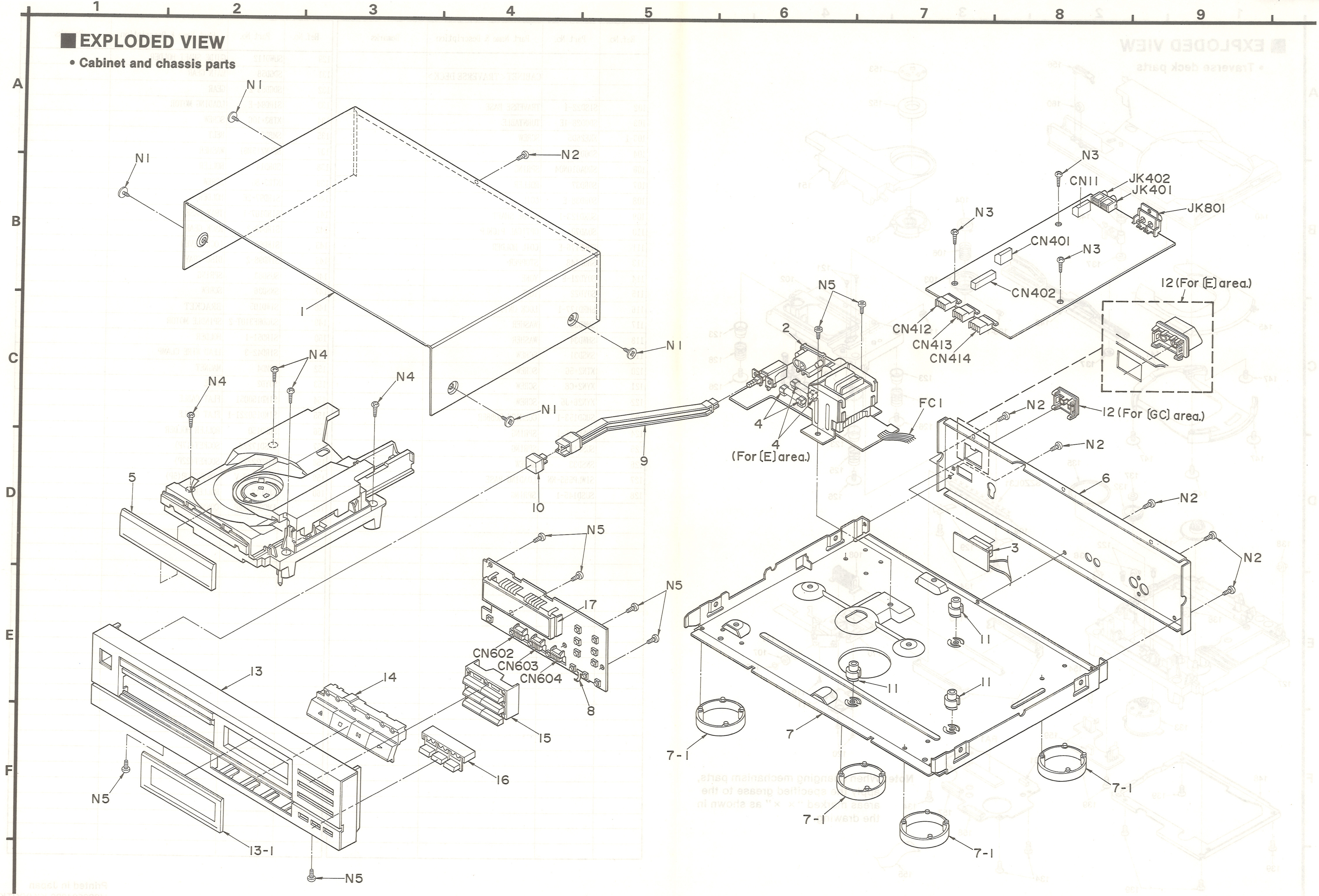
• F.B. Ass'y





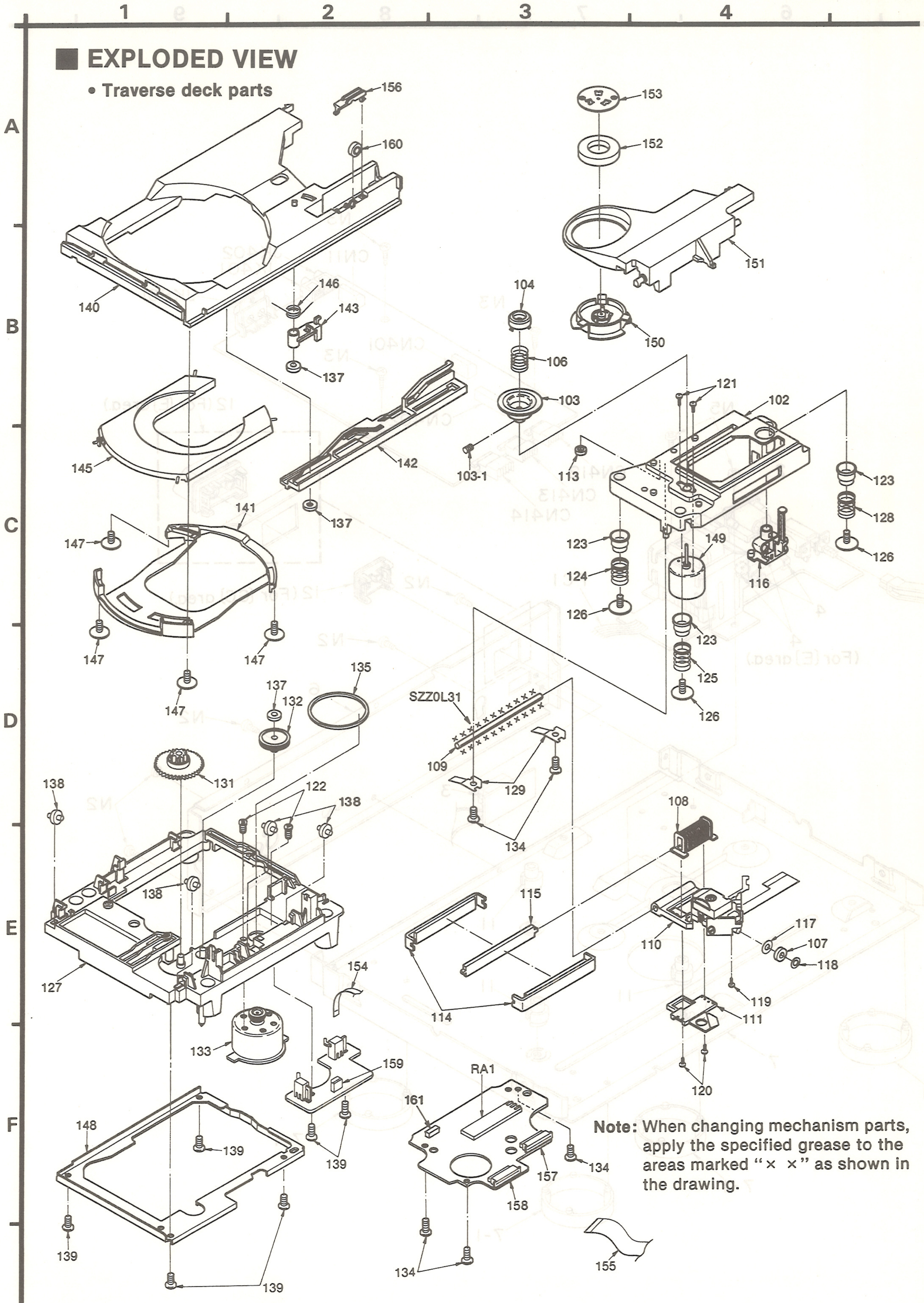
■ EXPLODED VIEW

- Cabinet and chassis parts


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
N1
N1
N2
N1
N1
1
N3
CN11
JK402
JK401
JK801
N3
CN401
N3
CN402
12 (For [E] area.)
N5
2
CN412
CN413
CN414
N4
N4
N4
N4
FC1
4
4
4
(For [E] area.)
N2
12 (For [GC] area.)
N2
9
5
10
6
N2
N5
3
N2
N5
17
11
CN602
CN603
CN604
13
14
8
11
11
15
7
7-1
16
N5
7-1
7-1
7-1
13-1
N5

■ EXPLODED VIEW

- **Traverse deck parts**


1
2
3
4
A
B
C
D
E
F
156
160
153
152
151
8
140
146
143
104
150
137
106
103
121
102
145
142
103-1
113
123
128
141
137
147
123
124
149
116
126
126
147
147
123
125
126
147
135
137
132
SZZ0L31
109
129
131
138
122
138
134
108
138
115
117
107
110
118
127
154
114
119
111
133
159
RA1
120
161
148
139
139
157
134
158
139
134
155
139

Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET<TRAVERSE DECK>	
102	SISD22-1	TRAVERSE BASE	
103	SD0D28-1E	TURNTABLE	
103-1	XXE26D5	SCREW	
104	SD0D29-2	RING	
106	SRQA010N04	SPRING	
107	SORD37	ROLLER	
108	SORD38-E	COIL	
109	SUXD123-1	GUIDE SHAFT	
110	SOAD70A	OPTICAL PICKUP	
111	SHRD176-E	COIL HOLDER	
113	SHGD148	STOPPER	
114	SOYD21-E	YOKE	
115	SOYD22	YOKE	
116	SHRD177-1	LOCK UNIT	
117	SHWD33	WASHER	
118	SHWD34	WASHER	
119	SNSD31	SCREW	
120	XTN2+5G	SCREW	
121	XYN2+C8	SCREW	
122	XYN26+J6	SCREW	
123	SHGD153-1	CUSHION RUBBER	
124	SUSD136-1	SPRING	
125	SUSD137-1	SPRING	
126	SNSD33	SCREW	
127	SIWLP555-KN	LOADING BASE	
128	SUSD145-1	SPRING	

Ref. No.	Part No.	Part Name & Description	Remarks
129	SUWD112	GUIDE SHAFT HOLDER	
131	SDGD58	MAIN GEAR	
132	SDGD59-2	GEAR	
133	SIRD94-E	LOADING MOTOR	
134	XTB3+10G	SCREW	
135	SMBD7	BELT	
137	SFUMZ15R61	WASHER	
138	SDRD14	ROLLER	
139	XTB3+8G	SCREW	
140	SIRD97-2E	HOLDER	
141	SIRD107-1	TRAY BASE	
142	SIRD40-2	RACK GEAR	
143	SIRD96	LOCK LEVER	
145	SIRD98-2	DISC TRAY	
146	SUSD83	SPRING	
147	SNSD36	SCREW	
148	SIWD105	BRACKET	
149	SJGDRF310T-2	SPINDLE MOTOR	
150	SIRD51-1	HOLDER	
151	SIRD42-3	LEAD WIRE CLAMP	
152	SOMD4	MAGNET	
153	SOYD2	YOKE	
154	SIKD150051	FLAT CABLE	
155	SIKD150221-1	FLAT CABLE	
156	SHRD150	ROLLER HOLDER	
157	SJSD1722M	SOCKET(17P)	
158	SJSD2222M	SOCKET(22P)	
159	SJT30543-V	CONNECTOR(5P)	
160	SDRD12	ROLLER	
161	EMCS0552MP	CONNECTOR(5P)	

Printed in Japan
H890504000 KK/YY/TK